

"We Strive to Guarantee Quality and Excellence"

Palau Community College is an accessible public educational institution helping to meet the technical, academic, cultural, social, and economic needs of students and communities by promoting learning opportunities and developing personal excellence.

T1 - Instructional Programs (Academic Degree & Certificate Programs)

Three Year Program Review

Degree / Certificate Program

Environmental / Marine Science Program

Period of Three Year Review

Fall of 2015 to Summer of 2018

Program Review Completed By:

Name	Title	Signature	Date
Gamberlyn Sherry	Associate Professor &	mili	Que 18 MAIG
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Program Review <u>Certified</u> By:

Name	Title	Signature	Date
Robert Ramarui	Dean of Academic Affairs	Kain Jamarino	June 18, 2019

Program Review <u>Received</u> By: (Institutional Research & Evaluation Office)

Name	Title	A Signature	Date
Ligaya T. Sava	Institutional Researcher	Ar	06-18-2019

Purpose:

2006; 2009; 2012; 2013; 2016; 2017; October 2018

Program review at Palau Community College is a process that provides an extensive evaluation of academic and non-academic programs on a three year basis. The results of yearly assessments (using the FAMED process) are compiled into the one three year review cycle.

The purpose of program review is to evaluate program sufficiency to allow definite strategies to be developed for major revisions, to provide information for consideration when decisions are made, and to develop recommendations to improve institutional effectiveness.

Instructions for completing Program Review:

- 1. Type your text into the boxes. The text boxes will expand to accommodate the amount of text spaces you need.
- 2. Individual instructions are included before each section. Examples are in <u>green</u>, remove when you start writing.
- 3. Submit completed and signed Program Review in both hard copy and electronic copy format to the Institutional Research & Evaluation Office.
- 4. Required supporting documents must be included during submission.

Appendix A: CLOs – PLOs – ILOs Mapping (e-copy only)

- Appendix B: Most Updated & Approved Outlines within this cycle (e-copy only)
- Appendix C: Most Updated Program Modification with PLOs within this cycle (e-copy only)
- Appendix D: FAMED grid of all course assessment data within review cycle (e-copy in pdf only)
- 5. Be sure to keep both hard and electronic copies for your file.

Note: Other college plans may include the 15-Year Institutional Master Plan, the 5-Year Technology Plan, Institutional Learning Outcomes, Institutional-Set Standards for Student Achievement, or other plans, such as an approved department plan or committee plan.

I. Academic Degree Program Purpose (Program Description) and Relationship to the College Mission

1. State the purpose of this academic degree program below.

One of the greatest challenges that have prevailed in recent years in Palau is the sustainability of Palau's terrestrial and marine environments and natural resources. Palau, like many island nations with limited human resources, continues to struggle to manage the changes to its ecosystems and biodiversity due to direct and indirect human actions. In 2000, Palau Community College (PCC) established the Environmental/Marine Science (ES) program to address the demand in Palau for a more scientifically literate workforce to manage its natural resources. When the ES program was first proposed in 2000, its primary goals were: (1) to prepare Palau students to enter and excel in science fields at four-year colleges and universities where they can continue their education and pursue master and doctorate degrees; and (2) to supply human resources with strong environment/marine science basic knowledge and skilled as lab technicians or other entry-level positions for the national and state government agencies, and non-government organizations. Its secondary goal was to strengthen science education for all of Palau Community College students by improving science course contents and providing diversity of science courses. Since then, the STEM Disciples (SD) program has been established to strengthen and diversify science courses offered at PCC. Presently, the original primary goals of the ES program continue to serve as beacons guiding the program forward with the changing times.

2. How is the academic degree program supporting the overall mission of the College?

The Environmental/Marine Science program at Palau Community College continues to promote learning opportunities and develop Palau's human resources to meet the technical, academic, cultural, social, and economic needs of individuals and communities throughout Palau and the region. An associate degree in this program provides an avenue for program alumni to enter the workforce in areas of natural resources management. In addition, through the EMS program, PCC can offer the option for government employees to upgrade their skills in the field of environmental and/or marine science fields. Furthermore, PCC EMS program provides the stepping stone for students interested in science wishing to pursue degrees at a four-year institution in related science fields.

3. Provide a brief history of this academic degree program below. Include the updates of major changes and accomplishments since the last review.

After 15 years and 32 program graduates, in July 7, 2015, the Environmental/Marine Science (EMS) program went through a significant review. It was the first time that EMS alumni and the program's community partners representing government, semi-government, and non-government agencies were invited to attend and participate in a roundtable discussion with the program faculty, Dean of Academic Affairs, and the Associate Dean of Academic Affairs. The community partners provided their opinions and criticisms on relevancy of program outcomes, while the alumni critiqued student learning contents for the core courses, and recommended solutions to further strengthen the program. Some of the alumni's comments and suggestions were validated upon careful review of the contents of the science core courses by the program faculty. With the alumni recommendations, program modifications were proposed and approved by Curriculum and Program Committee (CPC). The modifications are aimed at increasing the number of ES program alumni successfully matriculating to four-year colleges and universities to pursue and complete higher degrees. Furthermore, with the rapid advancement of technology in science, the laboratory and field research techniques in course contents warranted modification to keep up with the changing technologies of the 21st century. These program changes are intended to produce students with new skills and advanced and broader knowledge to be in employed in variety of science-related positions such as research assistants, laboratory technicians, managers of protected areas, and even science teachers. The CPC proved the following modifications that were implemented in Fall of

2016:

- 1) The alumni agreed that there were many overlaps in the course contents (student learning outcomes) of SC170 Marine Biology and SC201 Introduction to Oceanography. Because these two courses are currently offered together during the same semester, there were a lot of redundancies in lectures. They recommended that the courses be combined into a single core course. Review of the course outlines and textbooks for SC170 and SC201 validated the statement from the alumni. SC170 Marine Biology and SC201 Introduction to Oceanography were combined into a new four-credit course called SC190 Introduction to Marine Science.
- 2) Alumni who participated in the review were mostly those who chose to enter the workforce after they received their Associate degree and a few who were either pursuing bachelor degree at four-year colleges and universities or attempted. One of their recommendations was to include EN114 Advanced Composition as one of the required courses. Those who transferred to four-year colleges and universities expressed disappointment when EN112 Freshmen Composition was not accepted as college-level credits so they had to endure English placement tests again or challenge ESL requirements. With the deletion of one science core course, the ES program proposed that EN114 Advanced Composition become a required program course with the intention of building up English writing skills to allow for a smooth matriculation from PCC to accredited four year colleges and universities so students can complete their bachelor's degree on a timely manner and continue on to masters and/or doctorate degree.

II. Program Data



Degree Program Students – Number of Students Enrolled in this Degree Program

Provide summary of Figure 1 including its trends analysis.

Enrollment fluctuated these past three years as displayed on the graph above. There is not enough information to conclude with confidence that the eight students who enrolled in Fall of 2015 were the same students that graduated in the Summer of 2018. Useful information needed for such conclusion should include, but not be limited to, status at enrollment whether they are new students, returning students, or re-enrolling. Data provided for this review was also insufficient to identify factors causing enrollment fluctuations over the past three years. If we can identify these factors, we can work on retention and recruitment more effectively.

Program Courses Data (Course Completion Data of <u>Program Students</u> in each Program Course)

You may insert more rows as needed

Table 1a. Course Completion of Program Courses (Fall)

	FA 20 <u>15</u>					FA 20 <u>16</u>				FA 20 <u>17</u>				
<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled
SC109	1	1	0	2	SC109	7	0	0	7	SC109	7	1	0	8
SC119	2	1	0	3	SC119	9	0	0	9	SC119	6	1	1	8
SC170	2	0	0	2	SC161	1	0	0	1	SC120	5	0	0	5
SC201	1	1	0	2	SC170	1	0	0	1	SC161	5	0	0	5
SC239	1	1	0	2	SC201	1	0	0	1	SC239	5	0	0	5
					SC239	1	0	0	1					

Table 1b. Course Completion of Program Courses (Spring)

	SP 20 <u>16</u>					SP 20 <u>17</u>				SP 20 <u>18</u>				
<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled
SC110	1	0	0	1	SC110	6	1	0	7	SC110	6	1	0	7
SC120	1	0	0	1	SC160	7	1	1	9	SC160	4	1	0	5
SC160	1	0	0	1	SC249	3	0	1	4	SC190	5	0	0	5
SC161	2	1	0	3	SC270	1	0	0	1	SC249	3	0	0	3
SC249	1	0	0	1	SC275	1	0	0	1					

Table 1c. Course Completion of Program Courses (Summer)

	SU 20 <u>16</u>				SU 20 <u>17</u>				SU 20 <u>18</u>					
<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled
SC119	1	0	0	1						SC270	4	0	0	4
SC270	2	0	0	2						SC275	4	0	0	4
SC275	2	0	0	2										

Provide summary of Tables 1a, 1b & 1c including its trends analysis.

The following graph shows the percent of ES students passing the core science courses for the program for the fall semesters from 2015-2016. During the fall semester of 2015, there was a high percent of ES students who failed their science courses. During the same semester, There was one student that failed in four of the five courses offered. An average of 84.6% ES students passed the fall courses, 14.3% failed, while 1.1% withdrew during fall semesters of this review period.



2006; 2009; 2012; 2013; 2016; 2017; October 2018

The following graph shows the percent of ES students passing the core science courses for the program for the spring semesters from 2016-2018. An average of 90.6% ES students passed the spring courses during this review period. An average 6.4% of the ES students failed during spring semesters while an average of 3.03% chose to withdraw from their courses.



The following graph shows the percent of ES students passing the core science courses for the program for the summer semesters from 2016-2018. An average of 100% of the ES students passed the summer courses during this review period. There were no ES majors enrolled in any of the science courses offered during the summer of 2017.



Program Courses Data Course Completion Data of <u>ALL Students</u> in each Program Course (Does not apply for LA and SD Programs)

You may insert more rows as needed

Table 2a. Course Completion of Program Courses (Fall)

	FA 20 <u>15</u>					FA 20 <u>16</u>				FA 20 <u>17</u>				
<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled
SC109	12	5	3	20	SC109	31	1	2	34	SC109	22	3	1	26
SC119	12	5	2	19	SC119	17	3	1	21	SC119	13	2	4	19
SC170	2	0	0	2	SC161	3	0	0	3	SC120	5	0	0	5
SC201	1	1	0	2	SC170	1	0	0	1	SC161	7	0	0	7
SC239	5	5	0	10	SC201	1	0	0	1	SC239	10	4	4	18
					SC239	6	1	3	10					

Table 2b. Course Completion of Program Courses (Spring)

	SP 20 <u>16</u>					SP 20 <u>17</u>				SP 20 <u>18</u>				
<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled
SC110	3	0	0	3	SC110	10	1	0	11	SC110	6	1	0	7
SC120	2	0	1	3	SC160	9	1	1	11	SC160	7	2	1	10
SC160	3	0	0	3	SC239	21	10	6	37	SC190	5	0	0	5
SC161	3	1	0	4	SC249	14	3	4	21	SC249	5	0	0	5
SC249	20	6	8	34	SC270	1	0	0	1					
					SC275	1	0	0	1					
						ļ								

	SU 20 <u>16</u>				SU 20 <u>17</u>				SU 20 <u>18</u>					
<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled	<u>Course</u>	Passed	Failed	Withdraw	Enrolled
SC119	21	1	0	22	SC239	18	2	0	20	SC270	4	0	0	4
SC249	32	11	1	44	SC249	10	0	1	11	SC275	4	0	0	4
SC270	2	0	0	2										
SC275	2	0	0	2										

Table 2c. Course Completion of Program Courses (Summer)

Provide summary of Tables 2a, 2b & 2c including its trends analysis.

The follow graph shows that at an average, 73.6% of students who enrolled in the ES program core science courses during fall semesters passed. The graph below shows a higher percentage of students who failed in Fall of 2015. A possible contributing factor may be attributed to administrative decision to remove all the developmental courses, which were pre-requisites to some of the courses offered during Fall. The percent of students who failed in the fall of 2016 dropped significantly however, the percent of withdrawals was higher than those who failed.



The follow graph shows that at an average, 72.6% of students who enrolled in the ES program core science courses during spring semesters passed. There seem to have been an increased number of students who passed the core science courses for the ES program. The highest percentage of students who withdrew was 20.9% during spring semester of 2016. If your recall, this was the second semester of the school year when the developmental courses were deleted.



Graph below shows that an average of 81.5% of the students who enrolled in the core science courses for the ES program during summer semesters passed. This is nearly 10% higher than the averages for fall or spring semesters. However, the number of students who failed in the summer of 2016 was the highest in the three years of this review period at 25.0%. If you can recall, this is the summer after the fall semester when the developmental courses were deleted.





Provide summary of Figure 2 including its trends analysis.

Within this review period, 9 students successfully completed all the program requirements and received their associate degrees.



Provide summary of Figure 3 including its trends analysis.

Within this review period, EMS program have had to utilize services of a total of 15 part-time faculties, with the greatest need during the summer semesters of 2016 and 2017. Two different part-time faculties were contracted during the summer of 2016 to instruct two different sections of SC249. In the summer of 2017, another two part-time faculties were utilized to teach one section each of SC239 and SC249. There remains a need for an additional full-time faculty.

III. Student Learning and Curriculum

School Year	How many program courses are there? (refer to catalog or recent approval by CPC)	% of courses with Identified CLOs	List all revised program courses outlines or proposed new courses that received CPC approval within this review cycle	% of PLOs aligned with ILOs
2015-2016	14	100 % Refer to	SC109	100%
		Appendix B	SC110	Refer to
			SC119	Appendix A
			SC120	
			SC160	
			SC161	
			SC190-Added during program	
			modification. Refer to Appendix	
			<i>C</i> .	
			SC239	
			SC249	
			SC270	
			SC275	
			SC170 and SC201 were deleted	
			during this review period. Refer to	
			Appendix C for all program	
0.16.0.15		100.0/ 5.4	modifications.	1000/
2016-2017	14	100 % Refer to	SC160	100%
		Appendix B	SC161	Refer to
			SC239	Appendix A
2017-2018	14	100 % Refer to	NONE	100%
		Appendix B		Refer to
				Appendix A

Provide Summary of Student Learning and Curriculum in the box below. Summary should include reasons for course revisions and course proposals. If any course and/or the degree or the certificate program went through the validity process, include the information here.

All core science courses went through validity process during early spring of 2016. During this process there were modifications to the course outlines. Those proposed modifications were all approved by the CPC and implemented during Fall semester of 2016. Modifications are listed by course below for individual courses:

- SC109—CLO
- SC110—CLO and new textbook
- SC119—CLO
- SC120—CLO, new textbook, revised SLO, pre-requisite added, integration of technology into method of instruction
- SC160—CLO, catalog description revised, pre-requisite added
- SC161—CLO, catalog description revised, pre-requisite added
- SC170—Course deleted
- SC190—New course proposed that combined SLOs from SC170 and SC201
- SC201—Course deleted
- SC239—CLO
- SC249—CLO, catalog description, new textbook, SLOs, pre-requisites
- SC270—CLO

• SC275—CLO/Internship rating sheet

Below is a list of course outlines that were modified, and approved by CPC during the SY2016-2017. The modifications are listed below by courses:

- SC160—Textbook change
- SC161—Textbook change
- SC239—New pre-requisite added; textbook change

IV. Course Assessment Data

Year 1: School Year 2015-2016

Semester	Course	CLO – PLO-	Results of Assessments
Assessed	Assessed	ILO Mapping	Percentage of students performing at Proficiency
			offered and assessed
FALL 2015	SC109	Refer to	CLO #1 - 67.11 % performed at proficiency level
	20109	Appendix A	CLO #2 - 70.3% performed at proficiency level
			CLO #3 - 72.5 % performed at proficiency level
			<i>CLO</i> #4 – 77.6 % performed at proficiency level
			CLO #5 – 98.3 % performed at proficiency level
			CLO #6 – 88.7 % performed at proficiency level
FALL 2015	SC119	Refer to	CLO #1-75 % performed at proficiency level
		Appendix A	CLO #2 – 91 % performed at proficiency level
		11	CLO #3 – 82 % performed at proficiency level
			CLO #4 – 64 % performed at proficiency level
FALL 2015	SC170	Refer to	CLO #1—50 % performed at proficiency level
		Appendix A	CLO #2—50 % performed at proficiency level
			CLO #3—50 % performed at proficiency level
			CLO #4—50 % performed at proficiency level
			CLO #5—75 % performed at proficiency level
FALL 2015	SC201	Refer to	Note on FAMED—course not assessed due to
		Appendix A	insufficient data (course instructor was G. Sherry
			Ngirmeriil)
FALL 2015	SC239	Refer to	CLO #1—14 % performed at proficiency level
		Appendix A	<i>CLO #2—43 % performed at proficiency level</i>
			CLO #3—60 % performed at proficiency level
SPRING 2016	SC110	Refer to	CLO #1—100 % performed at proficiency level
		Appendix A	CLO #2—100 % performed at proficiency level
			CLO #3—100 % performed at proficiency level
			CLO #4—100 % performed at proficiency level
			CLO #5—100 % performed at proficiency level
			CLO #6—100 % performed at proficiency level
SPRING 2016	SC120	Refer to	CLO #1—100 % performed at proficiency level
		Appendix A	
SPRING 2016	SC160	Refer to	CLO #1—33% & 100% performed at proficiency level
		Appendix A	<i>CLO #2—33% performed at proficiency level</i>
			CLO #3—100% performed at proficiency level
			CLO #4—100 & 66% performed at proficiency level

			CLO #5—100% performed at proficiency level CLO #6—33% performed at proficiency level CLO #7—66% performed at proficiency level CLO #8—100% performed at proficiency level CLO #9—33% performed at proficiency level CLO #10—66% performed at proficiency level
SPRING 2016	SC161	Refer to	CLO #11—100% performed at proficiency levelCLO #1—100% performed at proficiency level
		Appendix A	CLO #2—100% performed at proficiency level CLO #3—100% performed at proficiency level
SPRING 2016	SC249	Refer to Appendix A	CLO #1—32 % performed at proficiency level CLO #2—86 % performed at proficiency level CLO #3—75 % performed at proficiency level CLO #4—83
SUMMER 2016	SC270	Refer to Appendix A	Vernice Yuji did not submit assessment
SUMMER 2016	SC275	Refer to Appendix A	Not assessed

Year 2: School Year 2016-2017

Semester Assessed	Course Assessed	CLO – PLO- ILO Mapping	Results of Assessments Percentage of students performing at Proficiency Level per CLO per course during the semester it was offered and assessed
FALL 2016	SC109	Refer to Appendix A	Vernice Yuji did not submit assessment
FALL 2016	SC119	Refer to Appendix A	Shelley Remengesau did not submit assessment
FALL 2016	SC161	Refer to Appendix A	Shelley Remengesau did not submit assessment
FALL 2016	SC170	Refer to Appendix A	CLO #1—100 % performed at proficiency level CLO #2—100 % performed at proficiency level CLO #3—100 % performed at proficiency level CLO #4—100 % performed at proficiency level
FALL 2016	SC201	Refer to Appendix A	CLO #1—100 % performed at proficiency level CLO #2—100 % performed at proficiency level CLO #3—100 % performed at proficiency level
FALL 2016	SC239	Refer to Appendix A	CLO #1—100 % performed at proficiency level CLO #2—86 % performed at proficiency level CLO #3—100 % performed at proficiency level
SPRING 2017	SC110	Refer to Appendix A	CLO #1—97.55 % performed at proficiency level CLO #2—96 % performed at proficiency level CLO #3—95.35 % performed at proficiency level CLO #4—98.2 % performed at proficiency level CLO #5—90.75 % performed at proficiency level CLO #6—93.5 % performed at proficiency level
SPRING 2017	SC160	Refer to Appendix A	CLO #1—100 % performed at proficiency level CLO #2—88.89 % performed at proficiency level CLO #3—77.78 % performed at proficiency level
SPRING 2017	SC239	Refer to	CLO #1—46.67 % performed at proficiency level

		Appendix A	CLO #2—58.06 % performed at proficiency level
			CLO #3—98.97 % performed at proficiency level
SPRING 2017	SC249	Refer to	CLO #1—77 % performed at proficiency level
		Appendix A	<i>CLO #2—81 % performed at proficiency level</i>
			CLO #3—92 % performed at proficiency level
			CLO #4—100 % performed at proficiency level
SUMMER 2017	SC270	Refer to	CLO #1—100 % performed at proficiency level
		Appendix A	CLO #2—100 % performed at proficiency level
			CLO #3—100 % performed at proficiency level
SUMMER 2017	SC275	Refer to	Not Assessment
		Appendix A	

Year 3: School Year 2017-2018

Semester Assessed	Course Assessed	CLO – PLO- ILO Mapping	Results of Assessments Percentage of students performing at Proficiency Level per CLO per course during the semester it was offered and assessed
FALL 2017	SC109	Refer to Appendix A	CLO #1 – 94.12 % performed at proficiency level CLO #2 – 94.12 % performed at proficiency level CLO #3 – 94.12 % performed at proficiency level CLO #4 – 94.12 % performed at proficiency level CLO #5 – 94.12 % performed at proficiency level CLO #6 – 94.12 % performed at proficiency level
FALL 2017	SC119	Refer to Appendix A	CLO #1—69.23 % performed at proficiency level CLO #2 – 42.86 % performed at proficiency level CLO #3 – 42.86 % performed at proficiency level CLO #4 – 57.14 % performed at proficiency level
FALL 2017	SC120	Refer to Appendix A	CLO #1—100 % performed at proficiency level
FALL 2017	SC161	Refer to Appendix A	CLO #1—42.86 % performed at proficiency level CLO #2—100 % performed at proficiency level CLO #3—33.33 % performed at proficiency level
FALL 2017	SC239	Refer to Appendix A	CLO #1—72.73 % performed at proficiency level CLO #2—90.91 % performed at proficiency level CLO #3—100 % performed at proficiency level
SPRING 2018	SC110	Refer to Appendix A	CLO #1—100 % performed at proficiency level CLO #2—83.3 % performed at proficiency level CLO #3—100 % performed at proficiency level CLO #4—83.3 % performed at proficiency level CLO #5—100 % performed at proficiency level CLO #6—100 % performed at proficiency level
SPRING 2018	SC160	Refer to Appendix A	CLO #1—62.5 % performed at proficiency level CLO #2—62.5 % performed at proficiency level CLO #3—100 % performed at proficiency level
SPRING 2018	SC190	Refer to Appendix A	CLO #1—100 % performed at proficiency level CLO #2—100 % performed at proficiency level CLO #3—100 % performed at proficiency level CLO #4—100 % performed at proficiency level CLO #5—100 % performed at proficiency level

SPRING 2018	SC249	Refer to	CLO #1—100 % performed at proficiency level
		Appendix A	CLO #2—100 % performed at proficiency level
			CLO #3—100 % performed at proficiency level
			CLO #4—100 % performed at proficiency level
SUMMER 2018	SC270	Refer to	Vernice Yuji did not submit assessment
		Appendix A	
SUMMER 2018	SC275	Refer to	CLO #1—100 % performed at proficiency level
		Appendix A	CLO #2—100 % performed at proficiency level

Provide Summary of Course Assessment Data with analysis results in the box below. Summary should include how assessment results have led to improvement of course and program learning outcomes, student learning and student achievement.

Note: For all the graphs below, value θ represents CLOs not assessed and the value -1 represents courses that should have been assessed but was not during semester it was offered.

Figure B1: The graph below shows SC109 assessment results over a period of 6 years. The value -1 represents CLOs that should have been assessed but were not during the semester this course was offered. During fall semesters of 2014 and 2016, this course was not assessed. Modifications to CLOs were technical changes. The contents and descriptions remained the same. On average, the 70% student proficiency expected for each CLO was achieved.







Figure B3: The graph below displays SC119 CLO assessment results over a period of 6 years. 0 values indicate that CLO was not in the FAMED grid used to assess the course. Data provided does not account for the two CLOs that were not assessed during the Fall semesters of 2013 and 2014. Couse outlines show 5 CLOs but FAMED show only 3 of the 5 CLOs. -1 value in fall 2016 represents a semester when the course was offered but part-time faculty did not submit course assessment. Course CLOs have been modified slightly. In 2015, the 5 CLOs were all assessed. In fall of 2016, new CLOs were implemented. Change to CLOs was insignificant. The fifth CLO was deleted as it was deemed not relevant to this course. Students did work together in small groups however; they were evaluated for individual performances and not as a group, hence, the removal of CLO #5. In the graph below, there is a significant drop in the assessment results for all the CLOs in this course in the fall of 2017. It is important to note that in fall of 2016, the College did away with all developmental courses, including the pre-requisites for this course—EN095 and MA095. Dropping the pre-requisites was a major change. Because the course was assessed for the first time in 2017 without pre-requisites, it was not enough data to conclude that the lack of pre-requisites was a major factor that contributed to the drop in CLO assessment results.



Figure B4: The graph below displays SC120 CLO assessment results over a period of 6 years. On average, the student proficiency for each CLO was over 100%, exceeding the 70% expected proficiency.



Figure B5: The graph below displays SC160 CLO assessment results over a period of 6 years. CLO #1 and

CLO #3 results seem to have fluctuated over the period of this report. The value -1in spring of 2014 and 2015 represents CLOs that should have been assessed but were not during the semesters this course was offered. CLO #2 results show a declining trend. SC119 is a pre-requisite to this course. CLO #2 of SC160 is linked to CLO #2 and CLO #4 of SC119. In retrospect, results of those CLOs in SC119 have been on a declining trend CLOs and similarly with CLO #2 in SC160. Average student proficiency over this reporting period is misleading due to two unreported semesters; hence it is not included in this analysis.



Figure B6: The graph below displays SC161 CLO assessment results over a period of 6 years. The value -1 represents CLOs that should have been assessed but were not during the semesters this course was offered in 2013, 2014, and 2016. 50% of the times this course was offered in the past six years, it was never assessed. With SC160 being a pre-requisite, it is safe to assume that the students assessed in SC160 in the Spring of 2017 are the same students assessed for the SC161 Fall 2017. They mastered scientific inquiry skills; however, most were not at proficiency level in their knowledge in chemistry and their scientific writing skills.



Figure B7: The graph below displays SC170 CLO assessment results fall of 2012. 0 values represents CLO that was not in the FAMED grid used to assess the course during a particular semester. This course was deleted from the program curriculum as an outcome of the discussion with program stakeholders in the community and program alumni. It was last offered in fall of 2016 to accommodate graduating student completing requirements from the 2012-2015 general catalog. On average, 83-90% of students assessed were proficient in all the CLOs which exceeded the 70% expected proficiency.



Figure B8: The graph below displays SC190 CLO assessment for only one semester. This course replaced SC170 and SC201 that were deleted from the program curriculum during program modification in 2016. 100% of students assessed were proficient in all the CLOs which exceeded the 70% expected proficiency.



Figure B9: The graph below displays SC201 CLO assessment results over a period of 4 years. The value -1 represents CLOs that should have been assessed but were not during the fall semester of 2015. This course was deleted from the program curriculum as an outcome of the discussion with program community stakeholders and program alumni. It was last offered in fall of 2016 to accommodate graduating student completing requirements from the 2012-2015 general catalog. On average, the 83-90% of students assessed was proficient in all the CLOs which exceeded the 70% expected proficiency. Results of assessments show that all students enrolled reached proficiency at the end of the semesters.



Figure B10: The graph below displays SC239 CLO assessment results over a period of 6 years. The value -1 represents CLOs that should have been assessed but were not during the semester this course was offered This course is usually a fall course however in 2017, it was offered during spring, summer, and fall semesters to accommodate students in other degree programs who needed a science course to graduate. Like SC119, the assessment results of this course show a rapid decline in the fall of 2015 when all developmental courses were deleted. Like SC119, pre-requisites for this course were EN092 and EN095. When students enrolled without the appropriate level of English reading and writing skills in any science course, you can expect similar results. By fall of 2017, EN109 became a pre-requisite and the assessment results improved and the 70% expected student proficiency was achieved.



Figure B11: The graph below displays SC249 CLO assessment results over a period of 6 years. Within this reporting period, there were few modifications to the course outline for SC249. The changes included updating textbook to the latest edition; revision of student learning outcomes (SLOs); revising course learning outcomes (CLOs). The CLOs were not overhauled. They were just simplified, rephrased, and worded in a more specific description. The delivery methods have also changed over the years from traditional classroom to hybrid, which includes some traditional classroom contact hours with online. From 2014 to 2016, assessment results for CLO #1 dropped from 54% to only 32% of the students assessed reaching proficiency, while CLO#2 fluctuated over the same time. To improve the results of CLO #1, a pre-requisite of EN112 was implemented in the fall of 2016. By making EN112 a pre-requisite, the students are now reading and writing at the college level and should have a better comprehension of the subject matter. Results of the spring 2018 indicate this to be somewhat true, but still

inconclusive. Course enrollment dropped so that may also be a factor. With smaller class size, the instructor was able to work with students individually and provide tutoring service tailored to their needs as explained in the course assessment.



Figure B12: The graph below displays SC270 CLO assessment results over a period of 6 years. The value -1 represents CLOs that should have been assessed but were not during the semesters this course was offered. There were no assessments completed during summers of 2016 and 2018. 100% of students assessed since spring of 2013 were proficient in all the CLOs.



Figure B13: The graph below displays SC275 CLO assessment results since spring 2013. The value -1 represents CLOs that should have been assessed but were not during the spring semester of 2016 when this course was offered. 100% of students assessed since spring 2013 were proficient in all the CLOs.



V. Program Learning Outcomes (PLOs) Assessment

Program Learning Outcomes Assessment Results

Year	PLO Assessed	Proficiency Levels	Results of Assessments
Assessed		(percentage of	(Do not combine PLO results; report individual PLO
		students performing	result.)
		at proficiency level	
GV2015 2016		per CLO)	
512015-2010	EMS PLO #1	<u>SC109:</u> CLO #1 67.110/	94% of the 51 course learning outcomes (CLO) in
		CLO #1 = 07.11%	the EMS program were assessed this school year.
		CLO #3 - 72.5%	An average, 74.2% of students assessed reached
		CLO #4 - 77.6 %	proficiency in all the CLOs aligned with program
		CLO #5 – 98.3 %	learning outcome (PLO) #1
		<i>CLO #6</i> – 88.7	
		<u>SC119:</u>	
		<i>CLO #1</i> —75 %	
		<i>CLO</i> #2 – 91 %	
		CLO #3 - 82 %	
		$\frac{SC170:}{CLO \# 1}$ 50.%	
		CLO #1 = 50 %	
		CLO #3-50 %	
		CLO #4-50 %	
		<u>SC201:</u>	
		CLO #1—insufficient	
		data	
		CLO #3—insufficient	
		aata SC230:	
		$\frac{5C239.}{CLO \# 1 - 14\%}$	
		CLO #2-43 %	
		SC110:	
		CLO #1—100 %	
		CLO #2—100 %	
		CLO #3—100 %	
		CLO #4—100 %	
		CLO #5—100 %	
		CLO #0—100 %	
		<u>SC120.</u> CLO #1—100 %	
		SC161:	
		CLO #1-100%	
		CLO #2—100%	
		CLO #3—100%	
		<u>SC249:</u>	
		CLO #1—32 %	
		CLU #2-80 %	
		$\frac{5C270}{CLO \# 1 - 100\%}$	
		CLO #2 - 100 %	
		SC275:	
		CLO #1—not assessed	
		CLO #2—not assessed	
SY2015-2016	EMS PLO #2	SC109	94% of the 51 course learning outcomes ($CL\overline{O}$) in
		<i>CLO #1 – 67.11 %</i>	the EMS program were assessed this school year.
		CLO #2 – 70. 3%	An average 70.8% of students assessed reached

		<i>CLO</i> #3 – 72 5 %	proficiency in all the CLO aligned with program
		CLO #4 77.6%	projiciency in all the CLO aligned with program
		CLO #5 08.3.9/	learning outcome (PLO) #2
		CLO #5 = 98.5 %	
		CLU #0 - 88.7 %	
		CLO #1—75 %	
		CLO #2 - 91 %	
		<i>CLO #3 – 82 %</i>	
		SC170	
		CLO #1—50 %	
		CLO #4—50 %	
		SC201	
		CLO #2—insufficient	
		data	
		SC239	
		CLO #2-43 %	
		CLO #3—60 %	
		SC110	
		CLO #4—100 %	
		CLO #6—100 %	
		SC120	
		CLO #1-100 %	
		SC161	
		CLO #1—100%	
		CLO #2—100%	
		CLO #3—100%	
		SC249	
		CLO #1-32 %	
		CLO #3—75 %	
		CLO #4-83 %	
		SC270	
		CLO #1-100 %	
		SC275	
		CLO #1—not assessed	
		CLO #2—not assessed	
SY2015-2016	EMS PLO #3	SC109	94% of the 51 course learning outcomes (CLO) in
		<i>CLO #1 – 67.11 %</i>	the EMS program were assessed this school year.
		SC119	At an average 77.6% of students assessed reached
		CLO #1—75 %	proficiency in all the CLO aligned with program
		CLO #2 – 91 %	1 amin a suite suite (DLO) #2
		<i>CLO #4 – 64 %</i>	ieurning ouicome (PLO) #5
		<i>CLO</i> #5 – 75 %	
		SC201	
		CLO #1—insufficient	
		data	
		CLO #2—insufficient	
		data	
		CLO #3—insufficient	
		data	
		SC239	
		CLO #2-43 %	
		CLO #3—60 %	
		CLO #4—100 %	
		CLO #6—100 %	
		SC120	
		CLO #1—100 %	
		SC161	
		CLO #1—100%	

		CLO #2—100%	
		CLO #3—100%	
		SC249	
		CLO #3—75 %	
		CLO #4-83 %	
		SC270	
		CLO #1—100 %	
		CLO #2—100 %	
		CLO #3—100 %	
		SC275	
		CLO #1—not assessed	
		CLO #2—not assessed	
SY2016-2017	EMS PLO #1	SC109	70.45% of the 44 course learning outcomes (CLO)
		CLO #1 – not assessed	in the EMS program were assessed this school year.
		CLO #2 – not assessed	At an average. 92.8% of students assessed reached
		CLO #3 – not assessed	proficiency in all the CLOs aligned with program
		CLO #4 – not assessed	learning outcome (PLO) #1
		CLO #5 – not assessed	
		CLO #6 – not assessed	
		SC119	
		CLO #1— not assessed	
		CLO #2 – not assessed	
		CLO #3 – not assessed	
		SC161	
		CLO #1— not assessed	
		CLO #2— not assessed	
		CLO #5— not assessed	
		SC170 CLO #1 100.92	
		CLO #1 = 100 %	
		CLO #2 - 100 %	
		CLO #4 - 100 %	
		SC201	
		CLO #1—100 %	
		CLO #3—100 %	
		SC239	
		CLO #1—100 %	
		CLO #2-86 %	
		SC110	
		CLO #1—97.55 %	
		CLO #2—96 %	
		CLO #3—95.35 %	
		CLO #4—98.2 %	
		CLO #5—90.75 %	
		CLO #6—93.5 %	
		SC160	
		CLO #1—100 %	
		CLO #2-88.89 %	
		CLO #3—77.78 %	
		SC239	
		CLO #1 = 40.07 %	
		SC240	
		CL0#1_77 %	
		CLO #1 = 77.70 CLO #2 = 81.%	
		SC270	
		CLO #1—100 %	
		CLO #2—100 %	

		SC275	
		CLO #1—100 %	
		CLO #2 - 100 %	
SV2016 2017	EMC DLO #2	SC100	70.450 of the 44 course learning outcomes (CLO)
512010-2017	EMSFLO#2	SC109	70.45% of the 44 course tearning outcomes (CLO)
		CLO #1 - 67.11 %	in the EMS program were assessed this school year.
		<i>CLO #2 – 70. 3%</i>	At an average, 92.8% of students assessed reached
		<i>CLO #3 – 72.5 %</i>	proficiency in all the CLOs aligned with program
		CLO #4 – 77 6 %	learning outcome (PLO) #?
		CLO #5 08.3.9/	icanting outcome (1 EO) #2
		CLO #J = 98.3 %	
		CLO #6 - 88.7 %	
		SC119	
		CLO #1-75 %	
		CLO #2 – 91 %	
		CLO #3 - 82%	
		CEO #5 02 70	
		SC101	
		CLO #1—100%	
		CLO #2—100%	
		CLO #3—100%	
		SC170	
		CLO #1_100 %	
		CLO #1 = 100 %	
		CLO #4—100 %	
		SC201	
		CLO #2—100 %	
		SC239	
		CLO #2-86 %	
		CLO #3 100 %	
		CLO #5-100 70	
		CLO #4—98.2 %	
		CLO #6—93.5 %	
		SC160	
		CLO #1—100 %	
		CLO #288 80 %	
		$CLO \#2 = 00.09 \ / 0$	
		CLO #3—77.78 %	
		SC239	
		CLO #2—58.06 %	
		CLO #3—98.97 %	
		SC249	
		CLO #1-77 %	
		CLO #2 02.9/	
		CLO #3 - 92 %	
		CLO #4—100 %	
		SC270	
		CLO #1—100 %	
		SC275	
		CLO #1-100 %	
		CLO #2 100 %	
502016 2017		CLO #2 - 100 70	70.450 of the 44 error in (CLO)
SC2010-2017	EMS PLO #3		70.45% of the 44 course learning outcomes (CLO)
		CLO #1 – 67.11 %	in the EMS program were assessed this school year.
		SC119	At an average, 65.1% of students assessed reached
		CLO #1-75 %	proficiency in all the CLOs aligned with program
		CLO #2 – 91 %	learning outcome (PLO) #3
		SC161	
		CLO #1—100%	
		CLO #2—100%	

		CLO #3—100%	
		SC201	
		CLO #1_100 %	
		CLO #1 - 100 %	
		CLO #2 100 %	
		CLO #5—100 %	
		SC239	
		<i>CLO #2</i> —80 %	
		CLO #3—100 %	
		SCI10	
		CLO #4—98.2 %	
		CLO #6—93.5 %	
		SC160	
		CLO #1—100 %	
		CLO #2-88.89 %	
		CLO #3—77.78 %	
		SC239	
		CLO #2-58.06 %	
		CLO #3—98.97 %	
		SC249	
		$CLO #3_92 \%$	
		CLO #4 - 100 %	
		SC270	
		CLO #1 100.94	
		CLO #1 - 100 %	
		CLO #2-100 %	
		SC2/3	
		CLO #1—100 %	
GY/0015 0010		CLO #2—100 %	
SY2017-2018	EMS PLO #1	SC109	87.50% of the 40 course learning outcomes (CLO)
		<i>CLO #1 – 94.12 %</i>	in the EMS program were assessed this school year.
		<i>CLO</i> #2 – 94.12 %	At an average, 86.0% of students assessed reached
		<i>CLO #3 – 94.12 %</i>	proficiency in all the CLOs aligned with program
		<i>CLO #4 – 94.12 %</i>	learning outcome (PLO) #1
		<i>CLO #5 – 94.12 %</i>	
		<i>CLO #6 – 94.12 %</i>	
		SC119	
		CLO #1-69.23 %	
		<i>CLO</i> #2 – 42.86 %	
		<i>CLO #3 – 42.86 %</i>	
		SC120	
		CLO #1-100 %	
		SC161	
		CLO #1-42.86 %	
		CLO #2—100 %	
		CLO #3-33.33 %	
		SC239	
		CLO #1-72.73 %	
		CLO #2—90 91 %	
		SC110	
		CL0 #1_100 %	
		$CIO \#2_833\%$	
		$\begin{array}{c} CLO \# 2 \\ \hline 0 \\ CLO \# 3 \\ 100 \ 0 \\ \end{array}$	
		CLO #J = 100 %	
1		CLU #4—85.5 %	

		CLO #5—100 %	
		CLO #6—100 %	
		SC160	
		CLO #1 = 62.5 %	
		CLO #2-62.5%	
		CLO #2 = 02.5 70 CLO #3 = 100 %	
		SC100	
		CLO #1_100 %	
		CLO #1 - 100 %	
		CLO #2 - 100 %	
		CLO #J = 100 %	
		SC249	
		CLO #1_100 %	
		CLO #2—100 %	
		SC270	
		CLO #1not assessed	
		CLO #2not assessed	
		SC275	
		CLO #1—100%	
		CLO #2 - 100%	
SY2017-2018	EMS PLO #2	SC109	87.50% of the 40 course learning outcomes (CLO)
512017 2010		CLO #1 - 94 12 %	in the EMS program were assessed this school year
		CLO #2 - 94 12 %	At an average 86.0% of students assessed reached
		CLO #3 - 94 12 %	proficiency in all the CLOs aligned with program
		CLO #4 - 94 12 %	learning outcome (PLO) #2
		CLO #5 - 94 12 %	
		CLO #6 - 94.12%	
		SC119	
		CLO #1-69.23 %	
		<i>CLO #2 – 42.86 %</i>	
		CLO #3 – 42.86 %	
		SC120	
		CLO #1—100 %	
		SC161	
		CLO #1-42.86 %	
		CLO #2—100 %	
		CLO #3—33.33 %	
		SC239	
		CLO #2—90.91 %	
		CLO #3—100 %	
		SC110	
		CLO #4—83.3 %	
		CLO #6—100 %	
		SC160	
		CLO #1-62.5 %	
		CLO #2-62.5 %	
		CLO #3—100 %	
		SC190	
		CLO #2—100 %	
		CLO #4—100 %	
		SC249	
		CLO #1—100 %	

		CLO #2 100.0/	
		CLO #3 - 100 %	
		CLO #4—100 %	
		SC270	
		CLO #1not assessed	
		SC2/5	
		<i>CLO</i> #1—100%	
		CLO #2—100%	
SY2017-2018	EMS PLO #3	SC109	87.50% of the 40 course learning outcomes (CLO)
		<i>CLO #1 – 94.12 %</i>	in the EMS program were assessed this school year.
		SC119	At an average, 86.0% of students assessed reached
		CLO #1—69.23 %	proficiency in all the CLOs aligned with program
		<i>CLO #2 – 42.86 %</i>	<i>learning outcome (PLO) #3</i>
		<i>CLO #4 – 57.14 %</i>	
		SC120	
		CLO #1—100 %	
		SC161	
		CLO #1-42.86 %	
		CLO #2—100 %	
		CLO #3—33.33 %	
		SC239	
		CLO #2—90.91 %	
		CLO #3—100 %	
		SC110	
		CLO #4-83.3 %	
		CLO #6—100 %	
		SC160	
		CLO #1-62.5 %	
		CLO #2-62.5 %	
		CLO #3—100 %	
		SC190	
		CLO #3—100 %	
		CLO #5—100 %	
		SC249	
		CLO #3—100 %	
		CLO #4—100 %	
		SC270	
		CLO #1not assessed	
		CLO #2not assessed	
		CLO #3not assessed	
		SC275	
		CLO #1—100%	
		CLO #2—100%	

Provide Summary of Program Learning Outcomes Assessments and analysis results in the box below. Summary should include analysis of this cycle with previous cycles; how assessment results have led to major decisions made to support the improvement of program's student learning and student achievement.

The graph below shows the total number of course learning outcomes (green bar), number of CLOs assessed (blue bars) and number of CLOs not assessed (red bars) for each school year within this review period.



The next bar graph below shows a significant increase in the number of CLOs not assessed for SY2016-2017 (red bar). 43.8% of the CLOs not assessed were from courses taught by part-time faculties who did not submit course assessments.



The bar graph below shows the average results of the assessed CLOs aligned to each program learning outcome (PLO) during this review period. These CLOs are aligned with the PLOs as seen on Appendix A. Based on the average results of the aligned CLOs to PLOs, the expected student proficiency during this reporting period was achieved. After some modifications, mostly inserting of new course pre-requisites, the 70% student proficiency target was achieved for all program learning outcomes. PLOs 2 & 3 averages seem to be precise in regards to the overall average percentage. PLO 1 results for SY2016-2017 is 3% lower than the average. This correlates with the increased number of CLOs that were not assessed in the above bar graph.



VI. Evaluation of Previous Program Review Action Plan(s)

Indicate the status of the previous program review action plans below. (Include all previous action plans.) Indicate the cycle and years of the **previous program review**.

Cycle: 2	Years	: Fall 2012 to Summer 2015
Action Plan Activity/Objectives	Status Complete/Ongoing/Incomplete	Updates of Action Plan/s (Report action plan individually.)
Drop the SC249 online hybrid section	Completed	Since last program review, SC249 instructional delivery method changed to traditional class while adjustments were made in light of the College's direction to drop developmental.
Change pre-requisite for SC249 to EN112	Completed	CPC approved and pre-requisite was implemented in fall of 2016
Combine SC170 and SC201 key concepts into one course	Completed	SC170 and SC201 were deleted and replaced by a new course SC190. Modifications to the program were approved by CPC and implemented in fall of 2016
Add EN114 as a required course	Completed	Modifications to the program were approved by CPC and implemented in fall of 2016
Instructors and ES majors actively recruit at high schools	Ongoing	This plan will always be an annual activity for the EMS program. We continue to work with various community organizations and high schools to recruit students into the EMS program.
Fund-sourcing	Ongoing	Fund-sourcing is another continuing activity for the program. We were able to secure funds through collaboration as Co-PI in an NSF-ATE grant with UH-Manoa Kewalo Marine Lab. We are proactive in fund-sourcing for the EMS program. NSF-ATE is on its final year. Funds from USDA-NIFA granted to partner with Agriculture program and promote distance learning for agriculture and related sciences at PCC. NIFA DEG grant ends in September 2020.

Provide Summary of the Evaluation of Previous Program Review Action Plans and analysis results in the box below. Summary should include what measurable outcomes were achieved due to the actions completed; were the completed action plans led to improvement of student learning and student achievement; and provide detailed explanation of action plans that are ongoing and plans that are incomplete.

EMS program modifications were completed. CPC approved all modifications. Modifications were implemented in fall of 2016. Recruitment and fund-sourcing are continuous activities. We did have new students enroll into the program during this review period. We continue to find avenues and opportunities to recruit for ALL science programs at the College including STEM and Agriculture programs. Fund sourcing is not an option. We must continue to be proactive in searching for fund opportunities and writing grant proposals.

VII. Action Plans

Based on this program review results, describe the program action plan for the next three (3) academic years. Include necessary resources.

Action Plan	How will this action plan	Needed Resources	Timeline
Activity/Objectives	improve student learning	(if any)	
	outcomes?		
	(CLO, PLO, ILO)		
Student Recruitment	Not driven by student learning		Every
	outcome		semester
Fund sourcing	Guarantees delivery of all program		Every
	learning outcomes		semester
Integration of	All CLOs and PLOs aligned with ILO	Internet accessibility	By the end the
technology in	#1 Critical Thinking and Problem	Laptops	next review
instructional	Solving, ILO#2 Communications, and	Technology in Classroom	cycle.
methodologies including	ILO #3 Quantitative and	that enables for live	
distance learning	technological Competence. Distance	streaming including Flat	
	learning expands learning arena for	screen smart TV, video	
	students makes learn more accessible	camera, voice amplifier	
	which is the mission of the College	portable microphone,	
Faculty professional		Funds for airfare, per	Annually
development		diem, ground	
		transportation	

Provide Summary of <u>Action Plans</u> in the box below. Summary should include program major strengths; program needs and any recommendations for improvements based on assessment results, data and/or other college major plans. The summary needs to indicate overall program needs that may require financial support from the institution.

Major Strengths:

- Maintained program enrollment
- Graduated 9 students in 3 years
- Program is continually supported and endorsed by stakeholders from science-related government, semigovernment, and non-government agencies including internationally recognized institutions such as Palau International Coral Reef Center, Palau Coral Reef Research Foundation, and Palau Conservation Society
- Supported by supplement funds from competitive federal grants such as NSF-ATE, IOA-LSAMP, and USDA-NIFA providing additional learning opportunities for students, elevating quality of instructions, and enhancing delivery of student learning outcomes

Needs:

- *Hire at least 1 full-time faculty*
- Science lab facility repairs
- Basic lab safety equipment
- Annual professional development for faculty in the program

Recommendations:

- Hire 1 full-time science faculty by fall 2019
- Allow release time for faculty to visit local and regional high schools to recruit not just for this program but also for STEM program as well
- It is the current practice for the Office of Academic Affairs to just refer part-time faculty to heads of departments or program chairs for FAMED and course assessment requirements. This task should not be assigned to the full-time faculty as we are overloaded with teaching and other duties. The Dean of Academic Affairs and Chairperson of CPC should provide training for part-time faculty on how to complete course assessments. This training should be mandatory and conducted during the first week of instructions so the part-time faculty knows to keep copies of signature assignments and are aware of the deadline and submitting process. If this is done correctly, we can improve our course assessment results. Based on this review, it shows that assessment results for courses taught by part-time faculties are often incomplete or not completed at all.

VIII. Resource Requests

Itemize resource request below to include resource requests that will support action plans and are datadriven (e.g. program enrollment, course needs, student needs). This section should provide a clear representation of the program's annual budget request.

Type of Resource	Description	Estimated Amount Requested	Justification
Personnel	1 Fulltime science instructor	\$18,000 - \$22,000 depending on qualifications	Since last ES program review, a new science degree program called STEM has been established increasing the need to offer more science courses. In addition, working with adjuncts has been difficult especially with the added course assessments required from them at the end of the semester. Many adjuncts are not too cooperative with the additional paperwork and thus the incomplete course assessments.
Facilities	List of lab repairs needed are carry- overs from last 2 program reviews. Lab Repairs-list is long as it includes those that were listed in the 2009- 2012 ES program review.	Not in EMS program budget	 <u>Ceilings in Science Labs</u> SL-A Ceiling with a gaping hole needs to be covered (Area Est. = 1.5 ft2) Water damaged ceiling around light bulb bases Water damaged ceiling in SL-A above AC needs to be replaced <u>Walls in Science Labs</u> Inside walls in SL-B adjacent to carpentry shop paint is peeling off due to water draining from the roof when it rains. Inside wall corners of SL-A need to be sealed to keep rats, kittens, and baby monitor lizards outside. Hole on the outside wall of SL-A needs to be sealed to keep pests outside.

			damage
			• <i>SL-A Cabinets under AC and next to the sink in the back of the room are termite infested</i>
			 <u>Air Condition Units</u> 3 AC Units in both labs need to be serviced on a regular basis. Right now, they are just blowing warm air.
			 <u>Lab Furniture</u> Additional 12 lab stools so two labs can be used at the same time at full capacity when needed
			 <u>Lab Safety Equipment</u>—as of the June 1, 2019, these basic lab safety equipment are not in the labs 3 fire extinguishers (SL A, SL B, and Storage). Emergency shower lever that turns water on and off is not accessible. It is about 6 feet rom the floor and beyond reach.
Equipment	Countertop Autoclave	\$8,000 - \$10,000 depending on make and model	This is a must to keep instruments sterile for microbiology labs and also used to make media used to culture microbial samples, such as water quality control tests for microbiology and chemistry courses.
	Flat screen smart TV	\$1000.00	Flat screen TV will allow for wireless projection of lectures, presentations, and etc from laptops, tablets, and even smartphone and for live streaming as well.
	HD Video camera	\$150	This eliminates the use of LCD projectors, replacements of LCD bulbs, and screens. The video
	Voice amplifier	\$120	camera, voice amplifier, and microphone with condenser are all part of flipping the classroom and delivering student learning outcomes through distance
	with noise condenser	<i>\$</i> 100	learning platforms.
Supplies	Consumables	\$8000 per semester	Consumables include ink for printers and copy machine, papers, white board markers, pens, and cleaning supplies for science labs. It also includes consumable materials for lab activities.
Software	Microsoft Office Home & Business 2016	\$350	Software upgrade to increase efficiency and productivity in all areas. Gradekeeper is for grade keeping. Adobe Acrobat allows instructors to meet
	Gradekeeper	\$100	requirements when submitting students' works as evidence during the course assessment period.
	Adobe Acrobat Pro 2017 Windows edition	\$130	
Training	Professional development	\$5,000	Science instructors need professional development and trainings in new and improved tools and technology used in lab and field data collection and make sure the research techniques required in the ES courses are compatible with accepted methods and techniques used

			by partner agencies and institutions.
Other	Ground	\$8000/school	Fuel cost for boat and bus rentals for field trips. This
	Transportation	year	is an estimated cost.
Total			

Provide Summary of Resource Request in the box below. Summary should connect the resources requested to course, program and institutional learning outcomes assessment results and/or any other college major plans.

The only requests from the last program review that was completed were the electrical wiring and light bulb replacements. The new requests in this review are listed under categories of **equipment** (excluding autoclave), **supplies**, **software**, and **ground transportations**. These new requests are in line with all CLOs and PLOs aligned with ILO #1 Critical Thinking and Problem Solving, ILO#2 Communications, and ILO #3 Quantitative and technological Competence.

All appendices are in separate folders. The following are links to the folders.

Appendix A: CLOs-PLOs-ILOs Mapping and Mapping with Levels of Learning

Appendix B: Most Recently Approved Course Outlines

Appendix C: Program Modification with PLO

Appendix D: Course Assessments FAMED Grids