



ANNUAL PROGRAM REPORT

Academic Program	Sciences and Mathematics
Reporting for Academic Year	2016 - 2017
Department Chair	Cynthia S. Trevisan
Date Submitted	December 21, 2017
*Forms are submitted in fall term following the academic year under review	

1. SELF-STUDY (Approx. 500 words)

Please present any planning goals from the last comprehensive Program Review, and report on progress toward achieving these goals.

Since our last Program Review (2013), our program achieved the following goals:
The chemistry program replaced its *Chemistry I* class with two specialized chemistry classes: *Introductory Chemistry*, and *General Chemistry*.

Two new classes were created in the marine sciences program, namely, *Marine Biology Laboratory*, and *Directed Research*.

A math minor was created, which included the development of the following new classes: *Introduction to Linear Algebra*, *Complex Analysis*, and *Probability and Statistics*.

One new class was created in the physics program: *Physics for Future Leaders*. No progress was made towards creating a minor in physics.

Supplemental instruction sessions were established for several classes in chemistry, physics and mathematics. Tenure-track faculty members in all programs (with the exception of computer sciences) have engaged undergraduate students in research projects at an individual level.

Faculty in our physics program were instrumental in creating and advising a new student club (Earth to Sky Maritime), which launches weather balloons into the upper stratosphere with the goal of conducting a variety of fundamental physics experiments like the measurement of solar energy flux.

B. Program Changes and Needs

Tenure-track faculty changes since our last review follow in all programs:

- 2016 – Dr. Matthew Fairbanks, Assistant Professor, Hired
- 2015 – Dr. Julie Simons, Assistant Professor, Hired
- 2015 – Dr. Ryan Smith, Assistant Professor, Resigned
- 2014 – Dr. Ryan Smith, Assistant Professor, Hired
- 2014 – Dr. Nelson Coates, Assistant Professor, Hired
- 2014 – Dr. James Wheeler, Professor, Retired
- 2013 – Dr. Alex Parker, Assistant Professor, Hired
- 2013 – Mr. Lloyd Kitazono, Professor, Retired

Changes and needs in the marine science program:

The Marine Science Program is gaining stature at Cal Maritime through the increases in the number of students pursuing and completing the minor, the formation of a campus student club, and student-led research and summer internships in ocean science and policy. Popularity in the Marine Science minor has been demonstrated by eight cadets completing the program in 2016 and projecting as many as 12 cadets in 2017. Beginning in Spring 2016, we offered our first life science laboratory in marine biology (MSC 205L). In January 2015, the Oceanography Club was established; club members have attended field trips to the Monterey Bay Aquarium, a visit to a research vessel, hosted marine science seminars and film screenings on campus. Finally, since spring 2014 cadets have been engaged in marine science research, especially in the areas of ocean observing, marine invasive species science / ballast water treatment, and estuarine surveys using Cal Maritime training vessels. Bolstered by the CSU COAST Undergraduate Research Support Program and funds from Cal Maritime, more than \$12,000 in funds has been awarded to students conducting marine science and policy research since 2014. We have also increased the inventory of research instrumentation, including a new clean water system, a conductivity, temperature, and depth profiler, fluorometer, UV-VIS spectrophotometer, optical dissolved oxygen probe and received a gift of a Gas – Chromatograph Mass Spectrometer. During spring 2018 a new oceanography laboratory will be renovated in the laboratory building.

Changes and needs in the chemistry program:

As our Department moves toward offering a major in oceanography, a second semester of general chemistry and a course in organic chemistry will need to be created and offered. This will require lab space and equipment.

Changes and needs in the mathematics program:

A minor in mathematics was created (see previous section).

Changes and needs in the physics and computer science program:

As our student population increases and these programs develop new offerings, faculty hires and lab equipment will be needed.

Need for all programs: student graders to help alleviate the high grading workload of professors and benefit students by providing earlier feedback on performance.

2. SUMMARY OF ASSESSMENT (Approx 500 words)

A. Program Student Learning Outcomes

Sciences – Student Learning Outcomes

1. Understand scientific principles and their relationship to the physical universe. (IWSLO-B,D)
2. Use theories, principles and models, in conjunction with the scientific method to analyze problems in science. (IWSLO-B, C, D)
3. Acquire and utilize mathematical and computational techniques to both analyze and comprehend problems in science. (IWSLO-B, C, D, G)
4. Effectively communicate scientific information in a way that is meaningful and convincing (IWSLO-A,F)

Mathematics – Student Learning Outcomes

1. Apply mathematical techniques and reasoning to problems in math. (IWSLO-C)
2. Create mathematical expressions from a word or application problem and analyze those expressions applying mathematical principles. (IWSLO-B, C)
3. Demonstrate an understanding of the theoretical and practical aspects of solving problems in math. (IWSLO-B, D)

B. Program Student Learning Outcome(s) Assessed

All program student learning outcomes were assessed.

C. Summary of Assessment Process

Department SLOs are assessed at the course level. Instructors gather assessment artifacts and apply an assessment rubric developed by the instructors and the department. Each instructor summarizes assessment results in a formal assessment report that is collected by the department chair.

D. Summary of Assessment Results

Our department is currently in the process of updating the department and course student learning outcomes with the following goals:

1. Clearly defining student learning outcomes for each course and showing alignment of course SLOs with department SLOs (which in turn align with university SLOs).
2. Developing clear rubrics for each course SLO to be used by all instructors.
3. Adopting common syllabi that include course descriptions and SLOs that are consistent across all instructors who teach each course and also are consistent with the course description in the catalog.
4. Organizing assessment reports in a common database. Currently, these reports are housed in a shared Drop-Box folder.

3. STATISTICAL DATA

Statistical data is meant to enhance and support program development decisions. These statistics will be attached to the Annual Report of the Program Unit. This statistical document will contain the same data as required for the five-year review including student demographics of majors, faculty and academic allocation, and course data.

<i>Program</i>	
<i>A. Students</i>	
1. Undergraduate	NA (no majors offered)
2. Postbaccalaureate	NA (no majors offered)
<i>B. Degrees Awarded</i>	NA (no majors offered)
<i>C. Faculty</i>	
Tenured/Track Headcount	(fall 2016)
1. Full-Time	9
2. Part-Time	0
3a. Total Tenure Track	9
3b. % Tenure Track	60
Lecturer Headcount	(fall 2016)
4. Full-Time (lecturers with WTUs ≥ 15)	1
5. Part-Time	5
6a. Total Non-Tenure Track	6
6b. % Non-Tenure Track	40
7. Grand Total All Faculty	15
Instructional FTE Faculty (FTEF)	(fall 2016)
8. Tenured/Track FTEF	7.13
9. Lecturer FTEF	4.65
10. Total Instructional FTEF	11.78
Lecturer Teaching	(fall 2016)
11a. FTES Taught by Tenure/Track	113.47
11b. % of FTES Taught by Tenure/Track	53.50
12a. FTES Taught by Lecturer	98.80
12b. % of FTES Taught by Lecturer	46.5
13. Total FTES taught	212.27
14. Total SCU taught	3,184
<i>D. Student Faculty Ratios</i>	
1. Tenured/Track	15.90
2. Lecturer	21.30
3. SFR By Level (All Faculty)	
4. Lower Division	18.50
5. Upper Division	7.60
<i>E. Section Size</i>	
1. Number of Sections Offered	55
2. Average Section Size	21.55
3. Average Section Size for LD	22.00
4. Average Section Size for UD	9.50
6. LD Section taught by Tenured/Track	29
7. UD Section taught by Tenured/Track	2

8. GD Section taught by Tenured/Track	0
9. LD Section taught by Lecturer	24
10. UD Section taught by Lecturer	0