



ANNUAL PROGRAM REPORT

Academic Program	Sciences and Mathematics
Reporting for Academic Year	2017 - 2018
Department Chair	Cynthia S. Trevisan
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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*, and *Introduction to Partial Differential Equations*.

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

Two new life science lecture and laboratory courses were developed in the marine science program, MSC 210 Marine Ecology, and MSC 210 Marine Ecology laboratory.

Marine science faculty and students participated in a NOAA National Marine Fisheries Service Southwest Fisheries Science Center oceanographic survey with funding to support Cal Maritime's work provided by a President's Mission Achievement Award.

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:

- 2017 – Dr. Abigail Higgins, Assistant Professor, Hired
- 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 2017-2018 Academic year the Department of Sciences and Mathematics continued to work towards the goal of a new Bachelor of Science degree with a major in Oceanography. This new degree, the first major to reside within the Department, is anticipated to be launched in the fall 2020. To this end, the Department conducted a national search for a new tenure-track position in physical oceanography. We interviewed a total of 14 potential candidates, inviting three candidates to visit the campus during February 2018. We made an offer to Dr. Alejandro Cifuentes-Lorenzen that was accepted. Additionally, as part of Dr. Cifuentes' negotiation, Cal Maritime hired Dr. Kaylan Randolph as an Assistant Research Scientist at the Golden Bear Research Center. As we make progress towards launching and growing our Oceanography major, we will need to hire additional faculty members.

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). Three Provost Curriculum Redesign grants were awarded to faculty members teaching mathematics in our Department. One of the grants was used to design a recitation/lab model class as a co-requisite to our entry-level math course, College Algebra and Trigonometry. This approach was taken to help under-prepared incoming students and to comply with Executive Order 1110 (EO 1110). EO 1110 requires campuses to eliminate remedial mathematics and English courses that do not offer college credits to students. Another grant produced worksheets that incorporate active learning techniques in class activities for Calculus I. The third grant was used to establish the curricula for a cross-disciplinary project that links activities between an Elementary Statistics course and a Critical Thinking course.

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

During the 2017-2018 academic year, formal assessment of all department SLOs were conducted with the exception of Sciences SLO-4.

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. Assessment reports and data can be found in the department Dropbox assessment folder.

D. Summary of Assessment Results

Our department has recently updated the department and course student learning outcomes with the following considerations:

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.

Having implemented these improvements in our assessment process, we are now seeking to improve the process by which assessment data and reports are collected. Currently, not all instructors have submitted reports for all courses during the 2017-2018 academic year which does not necessarily reflect a lack of assessment for all courses. Due to the incomplete record of assessment it is difficult to interpret general trends for the results.

Department and course assessment data was incorporated into the assessment of the Institute Wide Student Learning Outcome – C (Quantitative Reasoning) for the 2017-2018 academic year. IWSLO-C incorporates Sciences SLO-2&3 as well as Math SLO-1&2. Overall, the benchmark was met with 70% of student scoring 4 or better on a 6-point rubric. The results of the assessment did show that female students and underrepresented minorities performed slightly below the benchmark with 60% and 63%, respectively, scoring 4 or better on a 6-point rubric.

Our campus has recently adopted a new learning management system that incorporates robust assessment tools. We anticipate that as instructors become more familiar with this new system and with the assessment tools in particular, the collection of assessment data will become more streamlined. This will require additional training for all faculty in the use of the assessment tools available in the new system.

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 2017)
1. Full-Time	10
2. Part-Time	0
3a. Total Tenure Track	10
3b. % Tenure Track	67
Lecturer Headcount	(fall 2017)
4. Full-Time (lecturers with WTUs ≥ 15)	3
5. Part-Time	2
6a. Total Non-Tenure Track	5
6b. % Non-Tenure Track	33
7. Grand Total All Faculty	15
Instructional FTE Faculty (FTEF)	(fall 2017)
8. Tenured/Track FTEF	7.88

9. Lecturer FTEF	4.20
10. Total Instructional FTEF	12.08
Lecturer Teaching	(fall 2017)
11a. FTES Taught by Tenure/Track	127.27
11b. % of FTES Taught by Tenure/Track	63.4
12a. FTES Taught by Lecturer	73.47
12b. % of FTES Taught by Lecturer	36.6
13. Total FTES taught	200.73
14. Total SCU taught	3,011
D. Student Faculty Ratios	
1. Tenured/Track	16.2
2. Lecturer	17.5
3. SFR By Level (All Faculty)	
4. Lower Division	16.8
5. Upper Division	15.3
E. Section Size	
1. Number of Sections Offered	57
2. Average Section Size	19.2
3. Average Section Size for LD	19.6
4. Average Section Size for UD	15.4
6. LD Section taught by Tenured/Track	30
7. UD Section taught by Tenured/Track	5
8. GD Section taught by Tenured/Track	0
9. LD Section taught by Lecturer	22
10. UD Section taught by Lecturer	0