



## ANNUAL PROGRAM REPORT

Academic Program	Mechanical Engineering
Reporting for Academic Year	2018-2019
Department Chair	Nader Bagheri
Date Submitted	12/1/2019

### **1. SELF-STUDY (about 1 page)**

#### **A. Five-year Review Planning Goals**

The last comprehensive Program Review was the ABET Self-Study report which was prepared in July of 2019. The next comprehensive Program Review will be the ABET Self-Study report which will be prepared by July 1<sup>st</sup> of 2025. As part of the 2019 self-study report a comprehensive program review was made. ME program Student Outcomes, Assessment Process, and Assessment results are described in section 2 of this report.

#### **B. Five-year Review Planning Goals Progress**

Since the last comprehensive program review the most significant improvement plans directly impacting student learning outcomes have been: 1) Redesign of how information fluency/literacy is addressed in ME curriculum, and 2) Redesign of the overall assessment process in terms of the frequency and the number of courses assessed within the six-year ABET review period.

#### **C. Program Changes and Needs**

1. No changes to the curriculum.
2. Need to develop the Maker Space program, hire a technician, and upgrade the existing 3-D printers and the machines in the Machine Shop.

### **2. SUMMARY OF ASSESSMENT (about 1 page)**

#### **A. Program Student Learning Outcomes**

All graduates receiving a Bachelor of Science in Mechanical Engineering degree from the Cal Maritime are expected to have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The program Student Outcomes (SO) were revised in 2018 to follow the ABET revision to Criterion 3. The student outcomes may be found on the university's web page at <https://www.csum.edu/web/academics/programs3>

## **B. Program Student Learning Outcome(s) Assessed**

The student outcomes listed above were implemented in 2018. In AY 2018-2019, outcomes 1, 2, 3, and 6 were assessed. Each outcome is assessed once every two years. The outcomes are grouped so that roughly half of the outcomes are assessed on any given year. In AY 2019-20, outcomes 4, 5, and 7 will be assessed.

## **C. Summary of Assessment Process**

Instructor Course Assessment (ICA) is the primary tool used to measure achievement of student outcomes. Student work is assessed to measure achievement of course outcomes, and the course outcomes are linked to the student outcomes by each instructor. The mapping of courses to student outcomes can be seen in the Tables below. The benchmark is considered being met by an average assessment of 3 or greater or 70% of the scores being 3 or greater. The results are presented to the department for evaluation. The findings of the AY2018-19 assessment are shown below.

## **D. Summary of Assessment Results**

**Table 1. Average Assessment Scores**

<b>Course</b>	<b>SO1</b>	<b>SO2</b>	<b>SO3</b>	<b>SO6</b>
ME 339	3.89		4.00	3.99
ME 349	3.07		3.40	3.14
ME 350L	4.61		3.92	4.34

ME 360	4.40	4.52		4.52
ME 392	3.98			
ME 394	3.74	4.07		
ME 436	4.51	4.22		
ME 444	3.63	3.80	4.04	
ME 460L	4.97		4.64	4.97
ME 494		4.25	4.20	4.10

**Table 2. Percentage Scoring 3+**

Course	SO1	SO2	SO3	SO6
ME 339	90%		97%	92%
ME 349	57%		98%	81%
ME 350L	95%		96%	95%
ME 360	92%	96%		99%
ME 392	88%			
ME 394	81%	95%		
ME 436	98%	90%		
ME 444	83%	84%	92%	
ME 460L	100%		100%	100%
ME 494		85%	100%	100%

**Student Outcome 1:** an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

Previous Recommendations: N/A

Status of Previous Recommendations: N/A

This Year's Data: The nine courses assessed all met the benchmark. However, it should be noted that ME 349 had a low percentage of students scoring 3+.

Faculty Recommendation: Overall, there are no program level concerns, although ME 349 will be assessed again this cycle to see if there's a trend of this was a result of the data point. It could be worth considering dropping ME 392 since it only assesses SO1, which has by far the most samples.

**Student Outcome 2:** an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

Previous Recommendations: N/A.

Status of Previous Recommendations: N/A

This Year's Data: The five courses assessed met the benchmark.

Faculty Recommendation: No further action is required at this time.

**Student Outcome 3:** an ability to communicate effectively with a range of audiences

Previous Recommendations: N/A

Status of Previous Recommendations: N/A

This Year's Data: The six courses assessed all met the benchmark.

Faculty Recommendation: No further action is required at this time.

**Student Outcome 6:** an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Previous Recommendations: N/A

Status of Previous Recommendations: N/A

This Year's Data: The six courses assessed all met the benchmark.

Faculty Recommendation: No further action is required at this time.

### **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.

<b><i>Program</i></b>	2018
<b><i>A. Students</i></b>	
1. Undergraduate	194
2. Postbaccalaureate	3
<b><i>B. Degrees Awarded</i></b>	36
<b><i>C. Faculty</i></b>	
<b>Tenured/Track Headcount</b>	7
1. Full-Time	7
2. Part-Time	0
3a. Total Tenure Track	7
3b. % Tenure Track	100%
<b>Lecturer Headcount</b>	
4. Full-Time	0
5. Part-Time	0
6a. Total Non-Tenure Track	0
6b. % Non-Tenure Track	0
7. Grand Total All Faculty	7
<b>Instructional FTE Faculty (FTEF)</b>	
8. Tenured/Track FTEF	5.75
9. Lecturer FTEF	0
10. Total Instructional FTEF	5.75
<b>Lecturer Teaching</b>	
11a. FTES Taught by Tenure/Track	98.2
11b. % of FTES Taught by Tenure/Track	100
12a. FTES Taught by Lecturer	0
12b. % of FTES Taught by Lecturer	0
13. Total FTES taught	98.2
14. Total SCU taught	1,473
<b><i>D. Student Faculty Ratios</i></b>	
1. Tenured/Track	17.6
2. Lecturer	-
3. SFR By Level (All Faculty)	17.1
4. Lower Division	16.1
5. Upper Division	21.4
<b><i>E. Section Size</i></b>	
1. Number of Sections Offered	31
2. Average Section Size	20.8
3. Average Section Size for LD	27.9
4. Average Section Size for UD	18.3
6. LD Section taught by Tenured/Track	8
7. UD Section taught by Tenured/Track	23
8. GD Section taught by Tenured/Track	0
9. LD Section taught by Lecturer	0
10. UD Section taught by Lecture	0

