



ANNUAL PROGRAM REPORT

Academic Program	Mechanical Engineering
Reporting for Academic Year	2019-2020
Department Chair	Nader Bagheri
Date Submitted	12/1/2020

1. SELF-STUDY

A. Five-year Review Planning Goals

The last comprehensive Program Review was the ABET Self-Study report which was prepared in July 2019. An Engineering Accreditation Commission team of ABET visited our campus in fall 2019 to review the program. The next comprehensive Program Review will be the ABET Self-Study report which will be prepared by July 1st of 2025.

B. Five-year Review Planning Goals Progress

As part of the fall 2019 ABET visit a comprehensive program review was made by the ABET team. The final audit report was submitted in August 2020. The audit identified a weakness in Criterion 5 (curriculum) which requires 30-units of Math and Science in the program. The audit indicated that the ENG 300 course (Engineering Numerical Modeling & Analysis) did not meet the mathematics and basic science requirement. As a result of this finding the program is going through a curriculum revision to replace ENG 300 course with a life-science course.

C. Program Changes and Needs

In addition to replacing the ENG 300 course, the program is considering the following action items:

Curriculum revision:

- Streamline the curriculum course offering to offer a more manageable unit load for students
- Comply with the GE Executive Order 1100
- Follow through with the action Items from 2019 Assessment Review
- Realign core and options learning outcomes parts of the program
- Address concerns regarding student retention issues

2. SUMMARY OF ASSESSMENT

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/mechanical-engineering/objective-and-outcomes.html>

B. Program Student Learning Outcome(s) Assessed

No program student learning outcomes were assessed in 2019-20 due to the issues related with Covid-19 pandemic. 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 were supposed to have been assessed.

D. Summary of Assessment Process

This is a summary of the assessment results for 2018-19 to show the 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 AY 2018-19 assessment are shown below so to show how the process works.

E. Summary of Assessment Results

Table 1. Average Assessment Scores

Course	SO1	SO2	SO3	SO6
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

No institutional statistical data available as of December 2020. 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>	2019
<i>A. Students</i>	
1. Undergraduate	
2. Postbaccalaureate	
<i>B. Degrees Awarded</i>	
<i>C. Faculty</i>	
Tenured/Track Headcount	7
1. Full-Time	7
2. Part-Time	0
3a. Total Tenure Track	7
3b. % Tenure Track	100%
Lecturer Headcount	
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
Instructional FTE Faculty (FTEF)	
8. Tenured/Track FTEF	5.75
9. Lecturer FTEF	0
10. Total Instructional FTEF	5.75
Lecturer Teaching	
11a. FTES Taught by Tenure/Track	
11b. % of FTES Taught by Tenure/Track	
12a. FTES Taught by Lecturer	
12b. % of FTES Taught by Lecturer	
13. Total FTES taught	
14. Total SCU taught	
<i>D. Student Faculty Ratios</i>	
1. Tenured/Track	
2. Lecturer	-
3. SFR By Level (All Faculty)	
4. Lower Division	
5. Upper Division	
<i>E. Section Size</i>	
1. Number of Sections Offered	
2. Average Section Size	
3. Average Section Size for LD	
4. Average Section Size for UD	
6. LD Section taught by Tenured/Track	
7. UD Section taught by Tenured/Track	
8. GD Section taught by Tenured/Track	
9. LD Section taught by Lecturer	
10. UD Section taught by Lecture	

