



ANNUAL PROGRAM REPORT

Academic Program	Mechanical Engineering
Reporting for Academic Year	2021-2022
Department Chair	Nader Bagheri
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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. The next comprehensive Program Review will be the ABET Self-Study report which will be prepared by July 2025.

Since 2019, the Mechanical Engineering program has been primarily focused on implementing the Program Curriculum Changes approved in 2021. The revision included a restructuring that would potentially allow for future growth of its Energy Design and Mechanical Design Concentrations into new majors. While this implementation of new majors may not be completed in the next five years, the department shall take steps toward this goal.

B. Five-year Review Planning Goals Progress

The Mechanical Engineering program has seven student outcomes (SO) which are to be assessed over a two-year period. Student Outcomes 1, 2, 3, and 6 (Cycle 1) were assessed in 2018-19 year and the results were presented in the 2018-19 Annual Program Report. SO 4, 5, and 7 (Cycle 2) were supposed to have been assessed in 2019-20, but the COVID-19 pandemic prevented the department from assessing these outcomes. Cycle 2 outcomes were assessed in 2020-21 and presented in the 2020-21 program report. Cycle 1 assessment results will be presented in this report for the 2021-22 cycle.

The transition to the new Mechanical Engineering curriculum, which began with the Entering Class of 2021, is well underway. The program is monitoring the progress of students from prior entering classes to ensure that they can complete the full requirements laid out in their curriculum sheet. This has been achieved through advising and course substitutions.

C. Program Changes and Needs

Program changes, including courses added to the curriculum, courses removed from the curriculum, and courses with unit changes, were reported in the 2020-21 program report. The new curriculum does bring the program closer to full compliance with Executive Order 1100. The program needs to evaluate how it

addresses Area E: Lifelong Learning. In addition, guidance is needed from the institution as to how to address the GVAR in the curriculum with the removal of the exam option.

The program will need to commit time and resources to advance the development of the new concentration into potential majors. This work includes investment in a market research study and developing new courses pertinent to the proposed majors. The program will undertake the former in the coming years, however, depending on the findings of the study, there may be a need by the Mechanical Engineering program to hire faculty with technical expertise in the proposed areas of study.

2. SUMMARY OF ASSESSMENT

A. Program Student Learning Outcomes (SO)

All graduates receiving a Bachelor of Science in the Mechanical Engineering degree program from 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.

B. Program Student Learning Outcome(s) Assessed

Student outcomes 1, 2, 3, and 6 were assessed in 2021-22.

C. Summary of Assessment Process

Instructor Course Assessment (ICA) is the primary tool used to measure achievement of student outcomes. Student works are 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 as being met by an average assessment of 3 or greater, or 70% of the scores of 3 or greater. The results are presented to the department for evaluation and ratification purposes. The findings of the AY 2021-22 assessment are shown below.

D. Summary of Assessment Results

Table 1. Average Assessment Score

Course	Semester	Instructor	SO 1	SO 2	SO 3	SO 6
			>3	>3	>3	>3
ME339	Spring	Nordenholz	3.55		3.71	4.2
ME349	Fall	Tsai	5.00		3.95	4.13
ME350L	Fall	Snell	4.40		4.28	4.38
ME360	Fall	Holden	4.51	4.44		4.20
ME392	Spring	Oppenheim	4.19			
ME436	Spring	Holden	4.69	4.63		
ME444	Spring	Bagheri	4.67	4.33	4.50	
ME460	Spring	Snell	4.34			
ME460L	Spring	Snell	4.67		4.72	4.67
ME494	Spring	Oppenheim		4.25	4.20	4.60

Table 2. Percentage Scoring 3+

Course	Semester	Instructor	SO 1	SO 2	SO 3	SO 6
			% >3	% >3	% >3	% >3
ME339	Spring	Nordenholz	77%		84%	93%
ME349	Fall	Tsai	100%		88%	70%
ME350L	Fall	Snell	96%		85%	94%
ME360	Fall	Holden	95%	94%		89%
ME392	Spring	Oppenheim	93%			
ME436	Spring	Holden	97%	97%		
ME444	Spring	Bagheri	100%	100%	100%	
ME460	Spring	Snell	89%			
ME460L	Spring	Snell	100%		100%	100%
ME494	Spring	Oppenheim		85%	100%	100%

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>	Fall 2021
<i>A. Students</i>	
1. Undergraduate	
2. Postbaccalaureate	
<i>B. Degrees Awarded</i>	
<i>C. Faculty</i>	
Tenured/Track Headcount	
1. Full-Time	
2. Part-Time	
3a. Total Tenure Track	
3b. % Tenure Track	
Lecturer Headcount	
4. Full-Time	
5. Part-Time	
6a. Total Non-Tenure Track	
6b. % Non-Tenure Track	
7. Grand Total All Faculty	
Instructional FTE Faculty (FTEF)	
8. Tenured/Track FTEF	
9. Lecturer FTEF	
10. Total Instructional FTEF	
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 (non-laboratory courses) Offered	
2. Number of Labs Offered (if any)	
3. Average Section Size	
4. Average Section Size for LD	
5. 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 Lecturer	