CAL MARITIME

ANNUAL PROGRAM REPORT

Academic Program	Mechanical Engineering
Reporting for Academic Year	2015-16
Department Chair	Nader Bagheri
Date Submitted ***Forms are submitted in fall term following the academic year under review**	12/2016 (prepared by N. Bagheri/M. Holden)

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.

Present your Planning Goals from your last 5-Year Plan, indicating changes and updates from last year's report. Report on progress toward achieving these goals

The last comprehensive Program Review was the ABET Self-Study report which was prepared in July of 2013. The next comprehensive Program Review will be the ABET Self-Study report which will be prepared by July 1st of 2019. There are annual student outcome assessment reports which are prepared to measure achievement of student outcomes. ME program Student Outcomes, Assessment Process, and Assessment results are described in section 2 of this report.

B. Program Changes and Needs

Report on changes and emerging needs with relation to a) curriculum and b) resources (including faculty, staff, space, equipment).

a) There have been no changes with respect to the curriculum since the last comprehensive Program Review in 2013.
b) There is only one change with respect to the resources to report: A new tenure-track faculty hire, Dr. Tomas Oppenheim, in spring 2015 in the area of instrumentation and mechanical design.

2. **SUMMARY OF ASSESSMENT (Approx 500 words)**

A. Program Student Learning Outcomes

Graduates of our program will have:

1. an ability to apply knowledge of mathematics, science, and engineering
2. an ability to design and conduct experiments, as well as to analyze and interpret data
3. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. an ability to function on multi-disciplinary teams
5. an ability to identify, formulate, and solve engineering problems
6. an understanding of professional and ethical responsibility
7. an ability to communicate effectively
8. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
9. a recognition of the need for, and an ability to engage in life-long learning
10. a knowledge of contemporary issues
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
12. an ability to apply principle of engineering, basic science, and mathematics (including multivariate calculus and differential equations) to model, analyze, design, and realize physical systems, components or processes
13. ability to work professionally in both thermal and mechanical systems areas
14. an ability to apply the "hands-on" knowledge to solve/understand engineering design problems/systems
15. an ability to demonstrate leadership roles
16. an ability to comprehend and convey technical information.

B. Program Student Learning Outcome(s) Assessed

All

C. Summary of Assessment Process

The data were compiled over the academic year and summer and reviewed at a meeting in the Fall 2016 semester. The results are from several sources, which are listed below.

1. Quantitative assessment data from the 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. This data is in Table 5. The benchmark for these scores are an average assessment of 3 or greater, as well as 70% of the scores being 3 or greater.
2. The capstone projects (Project Design I and Project Design II) are assessed by faculty and industry advisory board members, and this data also contributes to our knowledge of student outcome achievement.
3. The Institution-Wide Assessment Council also assesses student learning outcomes; where possible the results are broken out for the Mechanical Engineering students for departmental assessment.

Using the available data, an evaluation of the degree to which each student outcome was satisfied was determined. For those outcomes with questionable results, recommendations were proposed to strengthen the results or the assessment process as needed.
In general the department is satisfied with the assessment results. This year the department examined the Student Outcome Matrix (Table 5) in order to see if it would be possible to achieve reliable results without assessing every section of every course. The courses highlighted in yellow are the courses that the faculty suggested be assessed on a yearly basis after a preliminary discussion.

D. Summary of Assessment Results

The table below includes all the quantitative course-based assessment. Each column corresponds to a Student Outcome (SO) and each row corresponds to a course. The totals are summarized at the bottom. Please see the attached full report for a discussion of each SO.

Red flags: Average belo 3

Passing belo 70%

Instructor Class Assessment (ICA) Quantitative Measures 2015-2016

					SO1		SO2		SO3		SO4		SO5		SO6		SO7		SO8		SO9		SO10		SO11		SO12		SO13		SO14		SO15		SO16	
Course	Year	Semester	Instructor	Stem	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Perce	Ave	Percent ≥ 3
ME 240	2	Spring	Tsai	Energy	3.8	79%							3.78	78%																				
ME 340	3	Fall		Energy																														
ME344	3	Spring	Tsai	Energy	4.03	87%							4.03	87%													4.05	86%						
ME 440	3	Spring	Bagheri	Energy	3.5	81%			4.06	100%			3.5	81%															3.5	81%				
ME 349	4	Fall	Tsai	Energy	4.29	76%	4.23	76%	4.18	75%	4	77					4.15	79%							4.23	76%	4%	76%	4.18	75%			4	77%	4.15	79%
ME 394	4	Fall	Bagheri	Energy	4	85%			4.19	92%			4	85%			4.49	98%			4.49	98%			4.28	94%	4	85%	4	85%						
ENG 440	4	Fall		Energy																														
ENG 440	4	Fall		Energy																														
ME 442	4	Fall	Pronchick	Energy	4.6	100%			4.7	100%			4.5	100%	4.6	100%	4.8	100%			4.9	100%			4.6	100%	4.6	100%	4.6	100%					4.8	
ME 444	4	Spring	Bagheri	Energy	4.07	88%			4.3	92%			3.5	100%			3.5	100%			3.5	100%							4.27	88%						
ME 230	2	Fall	Pronchick	Mech.	3.8	82%			3.3	69%			3.3	67%											3.6	69%	3.6	74%	3.8	85%			3	62%		
ME 230	2	Fall	Oppenheim	Mech.	3.6	70%							3.4	66%			3.7	73%																
ME 232	2	Fall	Nordenholz	Mech.	4.1	84.8							4.1	84.8																				
ME232	2	Fall	Snell	Mech.	4.31	98%							4.31	98																				
ME 330	2	Spring	Snell	Mech.	3.96	82%							3.96	82%													3.91	82%						
ME 332	2	Spring	Oppenheim	Mech.	2.36	45%							2.36	45%																				
ME 339	3	Spring	Nordenholz	Mech.	4.35	96%	4.47	98%					4.12	93%			4.26	95%							4.33	95%	4.12	93%	4.33	96%					4.4	97%
ME 392	3	Spring	Oppenheim	Mech.	3.56	72%							3.56	72%																				
ME 436	3	Spring	Holden	Mech.					3.8	83%															4.18	91%	4.07	92%			4.19	92%				
ME 430	4	Fall	Nordenholz	Mech.	3.7	77.2	4.48	97.1					3.7	77.2			4.48	97.1							3.75	81.4	3	52.2	3.75	81.4						
ME 432	4	Spring		Mech.																														
ENG 250	2	Spring	Holden	Inst/Ctr	3.86	81%							3.81	80%											3.62	82%	3.81	80%						
ENG 250	2	Spring	Holden	Inst/Ctr																														
ME 350	3	Fall	Snell	Inst/Ctr	3.91	88							3.91	88																				
ME 350L	3	Fall	Snell	Inst/Ctr			3.89	91%			3.86	90%													3.96	92%							3.88	85%
ME 360	3	Fall	Holden	Inst/Ctr	4.16	90%	3.95	87%	4.11	88			3.9	85%											4.33	92%	3.52	69%						
ME 360L	3	Fall	Holden	Inst/Ctr	4.36	93%																												
ME 460	3	Spring	Snell	Inst/Ctr	3.88	78%							3.88	78%											3.88	78%								
ME 460L	3	Spring	Snell	Inst/Ctr																														
ENG 110	1	Fall	Pronchick	Design											4.5	96%			4.8	98%	4.4	96%	4.6	97%										
ENG 210	1	Fall	Tsai	Design	4.09	88%							3.62	77%							4.14	88%			4.08	87%								
ME 220	2	Fall	Gutierrez	Design																					4.65	100%								
ENG 300	3	Fall	Gutierrez	Design	3.33	79%							4.02	97%											4.34	100%								
ME 490	3	Spring		Design																														
ME 492	4	Fall		Design																														
ME 429	4	Spring		Design																														
ME 494	4	Spring		Design																														
	Number meeting:				22	22	5	5	8	7	2	2	20	18	2	2	7	7	1	1	5	5	1	1	14	13	10	10	8	8	1	1	2	1	4	3
	Percent meeting:				96%	96%	100%	100%	100%	88%	100%	100%	95%	86%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	93%	91%	91%	100%	100%	100%	100%	100%	50%	100%	100%
	Total having				23	23	5	5	8	8	2	2	21	21	2	2	7	7	1	1	5	5	1	1	14	14	11	11	8	8	1	1	2	2	4	3

		SO1	SO2	SO3	SO4	SO5	SO6	SO7	SO8	SO9	SO10	SO11	SO12	SO13	SO14	SO15	SO16
	Notes:	Fine	Fine	Fine	OK	Fine	OK	Fine	OK	Fine	OK	Fine	Fine	Fine	OK	OK	Fine
		Over-assessed			Under-assess	Over-assesse	Under-assessed		Under-assessed		Under-assess	over-assessed?			Under-assess	Under-assessed	

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.

Program: Mechanical Engineering	F 15 – S 16
A. Students	
1. Undergraduate	206 - 191
2. Postbaccalaureate	6 - 7
B. Degrees Awarded	48
C. Faculty	
Tenured/Track Headcount	
1. Full-Time	8
2. Part-Time	0
3a. Total Tenure Track	2
3b. % Tenure Track	25%
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	8
Instructional FTE Faculty (FTEF)	
8. Tenured/Track FTEF	6.3
9. Lecturer FTEF	0
10. Total Instructional FTEF	6.3
Lecturer Teaching	
11a. FTES Taught by Tenure/Track	112
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	112
14. Total SCU taught	1676
D. Student Faculty Ratios	
1. Tenured/Track	18
2. Lecturer	0
3. SFR By Level (All Faculty)	18
4. Lower Division	17
5. Upper Division	20
E. Section Size	
1. Number of Sections Offered	33
2. Average Section Size	22
3. Average Section Size for LD	24
4. Average Section Size for UD	22
6. LD Section taught by Tenured/Track	9
7. UD Section taught by Tenured/Track	24

8. GD Section taught by Tenured/Track	33
9. LD Section taught by Lecturer	0
10. UD Section taught by Lecturer	0