Program Name: MS Mechanical Engineering

Question 1: Program Learning Outcomes

Q1.1. Which of the following Program Learning Outcomes (PLOs), Sac State Baccalaureate Learning Goals (BLGs), and emboldened Graduate Learning Goals (GLGs) **did you assess**? **[Check all that apply]**

- [ ] 1. **Critical thinking**
- [ ] 2. **Information literacy**
- [ ] 3. **Written communication**
- [ ] 4. **Oral communication**
- [ ] 5. Quantitative literacy
- [ ] 6. **Inquiry and analysis**
- [ ] 7. Creative thinking
- [ ] 8. Reading
- [ ] 9. Team work
- [ ] 10. Problem solving
- [ ] 11. Civic knowledge and engagement
- [ ] 12. **Intercultural Knowledge, Competency, and Perspectives**
- [ ] 13. Ethical reasoning
- [ ] 14. Foundations and skills for lifelong learning
- [ ] 15. **Global learning and Perspectives**
- [ ] 16. Integrative and applied learning
- [ ] 17. Overall competencies for GE Knowledge
- [X] 18. Overall competencies in the major/discipline
- [ ] 19. **Professionalism**
- [ ] 20. Other, specify any PLOs that were assessed but not included above:
  - a.
  - b.
  - c.

Q1.2. Please provide more detailed background information about **EACH PLO** you checked above and other information including how your specific PLOs were **explicitly** linked to the Sac State BLGs/GLGs:

The PLO assessed is **PLO 2** ***Knowledge and Analysis****: Identify and formulate technical requirements. Use mathematical and scientific tools to analyze, test, solve problems, and improve performance of designs.*

This PLO is directly related to the Graduate Learning Goal: **Disciplinary knowledge**: Master, integrate, and apply disciplinary knowledge and skills to current, practical, and important contexts and situations.

Q1.2.1. Do you have rubrics for your PLOs?

- [ ] 1. Yes, for all PLOs
- [X] 2. Yes, but for some PLOs
- [ ] 3. No rubrics for PLOs
- [ ] 4. N/A, other (please specify):

Q1.3. Are your PLOs closely aligned with the mission of the university?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

Q1.4. Is your program externally accredited (other than through WASC)?

- [ ] 1. Yes
- [X] 2. No (Go to **Q1.5**)
- [ ] 3. Don't know (Go to **Q1.5**)

Q1.4.1. If the answer to Q1.4 is yes, are your PLOs closely aligned with the mission/goals/outcomes of the accreditation agency?

- [ ] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

Q1.5. Did your program use the *Degree Qualification Profile* (DQP) to develop your PLO(s)?

- [ ] 1. Yes
- [X] 2. No, but I know what the DQP is
- [ ] 3. No, I don't know what the DQP is.
- [ ] 4. Don't know

Q1.6. Did you use action verbs to make each PLO measurable (See Attachment I)?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

IN QUESTIONS 2 THROUGH 5, REPORT IN DETAIL ON ONE PLO THAT YOU ASSESSED

Question 2: Standard of Performance for the selected PLO

Q 2.1. Select **ONE(1) PLO** here as an example to illustrate how you've conducted assessment (be sure you *checked the correct box* for this PLO in Q1.1):

- [ ] 1. **Critical thinking**
- [ ] 2. **Information literacy**
- [ ] 3. **Written communication**
- [ ] 4. **Oral communication**
- [ ] 5. Quantitative literacy
- [ ] 6. **Inquiry and analysis**
- [ ] 7. Creative thinking
- [ ] 8. Reading
- [ ] 9. Team work
- [ ] 10. Problem solving
- [ ] 11. Civic knowledge and engagement
- [ ] 12. **Intercultural Knowledge, Competency, and Perspectives**
- [ ] 13. Ethical reasoning
- [ ] 14. Foundations and skills for lifelong learning
- [ ] 15. **Global learning and Perspectives**
- [ ] 16. Integrative and applied learning
- [ ] 17. Overall competencies for GE Knowledge
- [X] 18. Overall competencies in the major/discipline
- [ ] 19. **Professionalism**
- [ ] 20. Other, specify any PLOs that were assessed but not included above:

a.
b.
c.

Q2.1.1. Please provide more background information about the **specific PLO** you've chosen in Q2.1:

The specific PLO we assessed in 2016-17 was developed to be closely aligned with the University Graduate Learning Goal "Disciplinary Knowledge" and is specifically: ***Knowledge and Analysis****: Identify and formulate technical requirements. Use mathematical and scientific tools to analyze, test, solve problems, and improve performance of designs.*

This PLO is one of 4 PLOs we assess to ensure that our MS ME program remains technically strong and able to ensure graduates will be able to further their careers in significant ways.

Q2.2. Has the program developed or adopted **explicit** standards of performance for this PLO?

- [ ] 1. Yes
- [X] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q2.3. **Please provide the rubric(s)** and **standard of performance** that you have developed for this PLO here or in the appendix:
[Word limit: 300]

We are in the process of developing this rubric working with the appropriate constituencies.

Please indicate where you have published the PLO, the standard of performance, and the rubric that measures the PLO:	Q2.4 (1) PLO	Q2.5 (2) Standards of Performance	Q2.6 (3) Rubrics
1. In **SOME** course syllabi/assignments in the program that address the PLO	X		
2. In **ALL** course syllabi/assignments in the program that address the PLO	X		
3. In the student handbook/advising handbook			
4. In the university catalogue			
5. On the academic unit website or in newsletters			
6. In the assessment or program review reports, plans, resources or activities	X	X	
7. In new course proposal forms in the department/college/university			
8. In the department/college/university's strategic plans and other planning documents	X	X	
9. In the department/college/university's budget plans and other resource allocation documents			
10. Other, specify:			

Question 3: Data Collection Methods and Evaluation of Data Quality for the Selected PLO

Q3.1. Was assessment data/evidence **collected** for the selected PLO?

- [X] 1. Yes
- [ ] 2. No (Skip to **Q6**)
- [ ] 3. Don't know (Skip to **Q6**)
- [ ] 4. N/A (Skip to **Q6**)

Q3.2. If yes, was the data **scored/evaluated** for this PLO?

- [X] 1. Yes
- [ ] 2. No (Skip to **Q6**)
- [ ] 3. Don't know (Skip to **Q6**)
- [ ] 4. N/A (Skip to **Q6**)

Q3.1.1. How many assessment tools/methods/measures **in total** did you use to assess this PLO?
One

Q3.2.1 Please describe how you collected the assessment data for the selected PLO. For example, in what course(s) or by what means were data collected (see Attachment II)? **[Word limit: 300]**
1. Exams, presentations and reports in ME 209

Q3A: Direct Measures (key assignments, projects, portfolios)

Q3.3. Were direct measures [key assignments, projects, portfolios, course work, student tests, etc.] used to assess this PLO?
- [X] 1. Yes
- [ ] 2. No (Go to **Q3.7**)
- [ ] 3. Don't know (Go to **Q3.7**)

Q3.3.1. Which of the following direct measures were used? **[Check all that apply]**
- [ ] 1. Capstone projects (including theses, senior theses), courses, or experiences
- [X] 2. Key assignments from required classes in the program
- [ ] 3. Key assignments from elective classes
- [X] 4. Classroom based performance assessments such as simulations, comprehensive exams, critiques
- [ ] 5. External performance assessments such as internships or other community based projects
- [ ] 6. E-Portfolios
- [ ] 7. Other portfolios
- [ ] 8. Other measure. Specify: Industry partner evaluations of projects

Q3.3.2. Please **provide** the direct measure you used to collect data, THEN **explain** how it assesses the PLO:
Exams and project reports from ME 138 and ME 190

ME 209 articulates and develops the technical analytical skills associated with possession of an MS in Mechanical Engineers. It is one of the three core courses in the MS ME program required of all students.

Q3.4. How was the data evaluated? **[Select only one]**
- [X] 1. **No** rubric is used to interpret the evidence (Go to **Q3.4.4**)
- [ ] 2. Used rubric developed/modified by the faculty who teaches the class
- [ ] 3. Used rubric developed/modified by a group of faculty
- [ ] 4. Used rubric pilot-tested and refined by a group of faculty
- [ ] 5. The VALUE rubric(s)
- [ ] 6. Modified VALUE rubric(s)
- [ ] 7. Used other means (Answer **Q3.4.1**)

Q3.4.1. If you used other means, which of the following measures were used? **(Check all that apply)**
- [ ] 1. National disciplinary exams or state/professional licensure exams
- [ ] 2. General knowledge and skills measures (e.g., CLA, CAAP, ETS PP, etc.)
- [ ] 3. Other standardized knowledge and skill exams (e.g., ETS, GRE, etc.)
- [ ] 4. Other, specify:

Q3.4.2. Was the **rubric** aligned directly and explicitly **with the PLO**?
- [ ] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q3.4.3. Was the **direct measure** (e.g. assignment, thesis, etc.) aligned directly and explicitly **with the rubric**?
- [ ] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q3.4.4. Was the **direct measure** (e.g. assignment, thesis, etc.) aligned directly and explicitly **with the PLO**?
- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q3.5. How many faculty members participated in planning the assessment data collection of the selected PLO?
Four

Q3.5.1 How many faculty members participated in planning the evaluation of the assessment data for the selected PLO?
Four – the rubric is still under development

Q3.5.2. If the data was evaluated by multiple scorers, was there a norming process (a procedure to make sure everyone was scoring similarly)?
- [ ] 1. Yes
- [X] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q3.6. How did you **select** the sample of student work [papers, projects, portfolios, etc.]?
All student work was evaluated – there are less than 20 students per term in ME 209

Q3.6.1. How did you **decide** how many samples of student work to review?
All work was evaluated

Q3.6.2. How many students were in the class or program?
10 to 15 in each class each term

Q3.6.3. How many samples of student work did you evaluate?
All work was evaluatated

Q3.6.4. Was the sample size of student work for the direct measure adequate?
- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

Q3B: Indirect Measures (surveys, focus groups, interviews, etc.)

Q3.7. Were indirect measures used to assess the PLO?
- [ ] 1. Yes
- [X] 2. No (Skip to **Q3.8**)
- [ ] 3. Don't know

Q3.7.1. Which of the following indirect measures were used? **[Check all that apply]**
- [ ] 1. National student surveys (e.g., NSSE)
- [ ] 2. University conducted student surveys (e.g. OIR)
- [ ] 3. Program student surveys or focus groups
- [ ] 4. Alumni surveys, focus groups, or interviews
- [ ] 5. Employer surveys, focus groups, or interviews
- [ ] 6. Advisory board surveys, focus groups, or interviews
- [ ] 7. Other, specify:

Q3.7.1.1 Please explain and attach the indirect measure you used to collect data:

Q3.7.2 If surveys were used, how was the sample size decided?

Q3.7.3. If surveys were used, how did you select your sample?

Q3.7.4. If surveys were used, what was the response rate?

Q3C: Other Measures (external benchmarking, licensing exams, standardized tests, etc.)

Q3.8. Were external benchmarking data such as licensing exams or standardized tests used to assess the PLO?
- [ ] 1. Yes
- [X] 2. No (Go to **Q3.8.2**)
- [ ] 3. Don't know

Q3.8.1. Which of the following measures were used? **(Check all that apply)**
- [ ] 1. National disciplinary exams or state/professional licensure exams
- [ ] 2. General knowledge and skills measures (e.g., CLA, CAAP, ETS PP, etc.)
- [ ] 3. Other standardized knowledge and skill exams (e.g., ETS, GRE, etc.)
- [ ] 4. Other, specify:

Q3.8.2. Were other measures used to assess the PLO?
- [ ] 1. Yes
- [X] 2. No (Go to **Q4.1**)
- [ ] 3. Don't know (Go to **Q4.1**)

Q3.8.3. If other measures were used, please specify:

Question 4: Data, Findings and Conclusions

Q4.1. Please provide simple tables and/or graphs to summarize the assessment data, findings, and conclusions: (see Attachment III)
[Word limit: 600 for selected PLO]

Students will be able to: *Identify and formulate technical requirements. Use mathematical and scientific tools to analyze, test, solve problems, and improve performance of designs.*	Target performance for this assessment was that 90% of students would demonstrate "mastery" and all students would demonstrate "proficiency"	Students were tasked with assignments (problems, projects and creative challenges) that mirror expectations for MS Mechanical Engineers	Findings were 92% demonstrated "mastery" and 8% "proficiency".	The data collected and the evaluation of the data do not yield significant information. To close the loop, faculty are continuing to develop rubrics for this PLO, refining the draft and soliciting input from appropriate constituencies.

Q4.2. Are students doing well and meeting program standard? If not, how will the program work to improve student performance of the selected PLO?

Yes. The students continue to perform well. Rubrics will be developed for the PLO to provide better data to ensure that students meet the standards expected of MS ME graduates.

From evaluation of ME 209 work 21 students (87.5%) demonstrated "mastery" and 3 students (12.5%) demonstrated "proficiency".

Q4.3. For **selected** PLO, the student performance:

- [X] 1. **Exceeded** expectation/standard
- [ ] 2. **Met** expectation/standard
- [ ] 3. **Partially** met expectation/standard
- [ ] 4. **Did not meet** expectation/standard
- [ ] 5. No expectation or standard has been specified
- [ ] 6. Don't know

Q4A: Alignment and Quality

Q4.4. Did the data, including the direct measures, from all the different assessment tools/measures/methods directly align with the PLO?

- [ ] 1. Yes
- [X] 2. No
- [ ] 3. Don't know

Q4.5. Were **ALL** the assessment tools/measures/methods that were used good measures for the PLO?

- [ ] 1. Yes
- [X] 2. No
- [ ] 3. Don't know

Question 5: Use of Assessment Data (Closing the Loop)

Q5.1. As a result of this year's **assessment effort** and based on the prior feedback from OAPA, do you anticipate *making any*

Q5.1.1. Please describe *what changes* you plan to make in your program as a result of your assessment of this PLO. Include a

changes for your program (e.g., course structure, course content, or modification of PLOs)?

[ ] 1. Yes
[X] 2. No (Go to **Q5.2**)
[ ] 3. Don't know (Go to **Q5.2**)

Q5.1.2. Do you have a plan to assess the *impact of the changes* that you anticipate making?

[ ] 1. Yes
[ ] 2. No
[ ] 3. Don't know

description of how you plan to assess the impact of these changes. **[Word limit: 300 words]**

Q5.2. Since your last assessment report, **how have the assessment data from then been used** so far? **[Check all that apply]**

	(1) Very Much	**(2)** Quite a Bit	**(3)** Some	**(4)** Not at all	**(8)** N/A
1. Improving specific courses			**X**		
2. Modifying curriculum			**X**		
3. Improving advising and mentoring				**X**	
4. Revising learning outcomes/goals				**X**	
5. Revising rubrics and/or expectations				**X**	
6. Developing/updating assessment plan				**X**	
7. Annual assessment reports			**X**		
8. Program review				**X**	
9. Prospective student and family information					**X**
10. Alumni communication					**X**
11. WASC accreditation (regional accreditation)				**X**	
12. Program accreditation				**X**	
13. External accountability reporting requirement				**X**	
14. Trustee/Governing Board deliberations				**X**	
15. Strategic planning				**X**	
16. Institutional benchmarking				**X**	
17. Academic policy development or modification			**X**		
18. Institutional Improvement			**X**		
19. Resource allocation and budgeting				**X**	
20. New faculty hiring				**X**	
21. Professional development for faculty and staff				**X**	
22. Recruitment of new students				**X**	

23. Other Specify: The University Assessment program is a good tool for most programs that are not held to the discipline specific outside accreditation. For those like Engineering programs, the University assessment adds very little to our work.

Q5.2.1. Please provide a detailed example of how you used the assessment data above.

Q5.3. To what extent did you apply **last year's feedback** from the Office of Academic Program Assessment in the following areas?

	1. Very Much	2. Quite a Bit	3. Some	4. Not at All	5. N/A
1. Program Learning Outcomes				X	
2. Standards of Performance				X	
3. Measures				X	
4. Rubrics				X	
5. Alignment				X	
6. Data Collection				X	
7. Data Analysis and Presentation				X	
8. Use of Assessment Data				X	

9. Other, please specify:

Unfortunately with the small faculty and large number of students in the BS ME program, we did not have the resources to use any of the feedback

Q5.3.1.
Please share with us an example of how you applied **last year's feedback** from the Office of Academic Program Assessment in any of the areas above:

Additional Assessment Activities

Q6. Many academic units have collected assessment data on aspects of a program that are not related to PLOs (i.e., impacts of an advising center, etc.). **If** your program/academic unit has collected data on the program elements, please briefly report your results here. **[Word limit: 300]**

Q7. What PLO(s) do you plan to assess next year?

- [ ] 1. **Critical thinking**
- [ ] 2. **Information literacy**
- [X] 3. **Written communication**
- [ ] 4. **Oral communication**
- [ ] 5. Quantitative literacy
- [ ] 6. **Inquiry and analysis**
- [ ] 7. Creative thinking
- [ ] 8. Reading
- [ ] 9. Team work
- [ ] 10. Problem solving
- [ ] 11. Civic knowledge and engagement
- [ ] 12. **Intercultural Knowledge, Competency, and Perspectives**
- [ ] 13. Ethical reasoning
- [ ] 14. Foundations and skills for lifelong learning
- [ ] 15. **Global learning and Perspectives**
- [ ] 16. Integrative and applied learning
- [ ] 17. Overall competencies for GE Knowledge
- [ ] 18. Overall competencies in the major/discipline
- [ ] 19. **Professionalism**
- [ ] 20. Other, specify any PLOs that were assessed but not included above:

a.
b.
c.

Q8. Have you attached any files to this form? If yes, please list every attached file here:
Appendix – Rubric for PLO

Program Information (Required)

Q9. Program/Concentration Name(s):
MS in Mechanical Engineering

Q10. Report Authors:
Susan L. Holl

Q10.1. Department Chair/Program Director:
Susan L. Holl

Q10.2. Assessment Coordinator:

Q13. Fall 2015 enrollment for Academic unit *(See Department Fact Book by the Office of Institutional Research for fall enrollment)*:58

Q14. Program Type: **[Select only one]**

- [ ] 1. Undergraduate baccalaureate major
- [ ] 2. Credential
- [X] 3. Master's degree
- [ ] 4. Doctorate (Ph.D./Ed.D./Ed.S./D.P.T./etc.)
- [ ] 5. Other. Please specify:

Undergraduate Degree Program(s):

Q15. Number of undergraduate degree programs the academic unit has: 1

Q15.1. List all the name(s): BS in Mechanical Engineering

Q15.2. How many concentrations appear on the diploma for this undergraduate program? none

Master Degree Program(s):

Q16. Number of Master's degree programs the academic unit has: 1

Q16.1. List all the name(s): MS in Mechanical Engineering

Q16.2. How many concentrations appear on the diploma for this master program? None

Credential Program(s):

Q17. Number of credential programs the academic unit has: 0

Q17.1. List all the names:

Doctorate Program(s)

Q18. Number of doctorate degree programs the academic unit has: 0

Q18.1. List all the name(s):

When was your assessment plan… *(Please **obtain** and **attach** the assessment plan)*	1. Before 2011-12	2. 2012-13	3. 2013-14	4. 2014-15	5. 2015-16	6. 2016-17	7. No Plan	8. Do not Know
Q19. … developed?		X						
Q19.1. … last updated?						X		

	1. Yes	2. No	3. Don't Know
Q20. Have you developed a curriculum map for this program? *Please **obtain** and **attach** the curriculum map*.		X	
Q20.1. Has the program indicated explicitly where the assessment **of student learning** occurs in the curriculum?	X		
Q22. Does the program have a capstone class?		X	
Q22.1. Does the program have **ANY** capstone project?	X		