

2018-2019 Annual Program Assessment Report Guide

Please submit report to your department chair or program coordinator, the Associate Dean of your College, and to james.solomon@csun.edu, Director of the Office of Academic Assessment and Program Review, by **September 30, 2019**. You may, but are not required to, submit a separate report for each program, including graduate degree programs, which conducted assessment activities, or you may combine programs in a single report. **Please include this form with your report in the same file and identify your department/program in the file name.**

College: Engineering and Computer Science

Department: Mechanical Engineering

Program: BSME

Assessment liaison: Aram G. Khachatourians

- **Please check off whichever is applicable:**
 - A. Measured student work within program major/options.
 - B. Analyzed results of measurement within program major/options.
 - C. Applied results of analysis to program review/curriculum/review/revision major/options.
 - D. Focused exclusively on the direct assessment measurement of General Education Arts and Humanities student learning outcomes
- **Overview of Annual Assessment Project(s).** On a separate sheet, provide a brief overview of this year's assessment activities, including:
 - an explanation for why your department chose the assessment activities (measurement, analysis, application, or GE assessment) that it enacted
 - if your department implemented assessment **option A**, identify which program SLOs were assessed (please identify the SLOs in full), in which classes and/or contexts, what assessment instruments were used and the methodology employed, the resulting scores, and the relation between this year's measure of student work and that of past years: (include as an appendix any and all relevant materials that you wish to include)
 - if your department implemented assessment **option B**, identify what conclusions were drawn from the analysis of measured results, what changes to the program were planned in response, and the relation between this year's analyses and past and future assessment activities
 - if your department implemented **option C**, identify the program modifications that were adopted, and the relation between program modifications and past and future assessment activities
 - if your program implemented **option D**, exclusively or simultaneously with **options A, B, and/or C**, identify the basic skill(s) assessed and the precise learning outcomes assessed, the assessment instruments and methodology employed, and the resulting scores
 - in what way(s) your assessment activities may reflect the university's commitment to diversity in all its dimensions but especially with respect to underrepresented groups
 - any other assessment-related information you wish to include, including SLO revision (especially to ensure continuing alignment between program course offerings and both program and university student learning outcomes), and/or the creation and modification of new assessment instruments
- **Preview of planned assessment activities for 2019-20.** Include a brief description as reflective of a continuous program of ongoing assessment.

Overview of Annual Assessment Based on Measured Student Work – Option A

- For the last 6 years, the Mechanical Engineering Department has collected and measured student work, in accordance to Student Outcomes defined by the Accreditation Board for Engineering and Technology (ABET). These outcomes were previously referred to as outcomes a thru k. However, ABET revised these outcomes to 1 thru 7, as shown below:
 1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics (previously (a), (e); implied from (k))
 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 (previously (c); implied from (k))
 3. An ability to communicate effectively with a range of audiences (previously (g))
 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 (previously (f), (h), (j))
 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 (previously (d))
 6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions (previously (b), implied from (k))
 7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies (previously (i))

- Each semester assessment quizzes with specific questions that were mapped to outcomes listed above, were administered in all sections of core courses taught. Eleven semesters worth of data were collected in Moodle and Canvas. Quiz questions were designed by course coordinators assigned by the Mechanical Engineering Department Chair, and questions were not known to faculty teaching the various sections of these courses. Since the collected data were enormous, the department assessment committee made a decision to only evaluate signature questions. Table 1 shown below captures results from the assessment quizzes for core courses and mapped to the ABET outcomes 1 through 7.

Table 1: Student Learning Outcomes, based only on quiz data

Outcome	1	2	3	4	5	6	7
ME101	41.5	57	52		91		84
ME186	47	51	72				
ME209	63.5	49					
ME286	52	68.5	75				
ME309	41.5	36					27
ME330	38.5	57	64	56.0			
ME335	60.5					85	
ME370	29	49					
ME375	47.5	45		88.0			
ME384	64.5	50					
ME386	95	57					
ME390	51.5						
ME435	68.5					62	
Average	53.9	52.0	65.8	72.0	91.0	73.5	55.5

- Other than assessment quizzes mentioned above, the department used data collected from the sources listed below to assess how well the program performed in outcomes 1 thru 7:
 - EBI survey data
 - Senior Exit interviews conducted by the Department Chair at the end of each academic year
 - Industry Liaison Council feedback data
 - Senior Design Show Case data, and
 - Senior Design Critical Design Review (CDR) advisory board feedback

Overview of Annual Assessment Based on Analyzed Results of Student Work – Option B

- The Mechanical Engineering ABET committee also chose to analyze all the collected data and arrive at the overall assessment for the review period that took place earlier in the Fall semester of 2019. A comprehensive 249 page Self Study Report was generated by the department and submitted to ABET for review.
- The committee also prepared and presented sample work in support of outcomes 1 thru 7, when the Program Evaluator (PEV) came to campus for three days. A binder was prepared by the Department Chair that clearly listed our efforts in Continuous Improvements that the department had made in the past several years based on the data and observations. They ranged anywhere from change of pre-requisites, to new courses, and better training for students using our common machine shop and composites labs.
- In summary, it is important to state that the Mechanical Engineering Department's review by the ABET reviewer was a success and didn't result in any Weakness or Deficiency.