

# BSME, Mechanical Engineering

 Program-1279

## Annual Assessment Plan

1

2 **ULO 1A - ABET3**

an ability to communicate effectively with a range of audiences

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

**Measures** - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

**3 ULO 1B - ABET7**

an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

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4 **ULO 4A - ABET1**

an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

## Outcome(s)

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**Targets** - Percentage of students expected to earn a particular score on the measure.

**Timeline** - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
ENGR 471 - Exam problem that requires students to correctly identify the simplifying approximations that they made to complete an analysis of heat transfer.	80% of students score 75% or better on Question #1	Once every two years, next cycle FY23

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. \*Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

**ENGR 471 F20:** (Instructor Observations) Although approximation exercises were added to midterm exams, students continued to give the task too little attention relative analysis. Restructuring the assessment as a stand-alone Final Exam activity brought more focus and improved outcomes. 10 of 17 students (59%) achieved a score of 12 or higher, so the assessment fails, but 14 of 17 (82%) achieved a score of 11 or higher. To reach our goal, I propose introducing the matching exercise earlier in the course to associate analysis tools with their limitations, followed by a comprehensive assessment covering all course content during the Final Exam. In view of progress made, moreover, I recommend assessing this outcome again on typical cycle. (Dept Observations) Concur with instructor's observations.

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

**ENGR 471 F20:** Re-align timing within the course as described.

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

**ENGR 471 F20 Response to Action Plan:** Greater emphasis on the importance of identifying simplifying approximations was communicated by requiring that they be identified in at least one problem in each of the mid-term exams. The assessment was also restructured as a stand-alone element with greater weight on the Final Exam.

- 5 **ULO 4B - ABET5**  
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

## Outcome(s)

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There is no selected outcome.

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There is no selected outcome.

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**6 ULO 4C - ABET6**

an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

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- 7 **ULO 6A - ABET2**

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

## Outcome(s)

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There is no selected outcome.

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8 **ULO 6B - ABET4**

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

## Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.





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- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

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- 2 Holistic program improvement goals: Programs are expected to have at least one action plan to improve student learning annually. If you have not yet identified an action plan associated with this year's assessment results, or if the department has identified additional issues that require action plans, describe the specific, measurable action plan and its relation to evidence of student performance.

## Assessment Rubric



1

**Process**

	1	2	3	4
<p><b>Is the plan being implemented faithfully and revised as needed?</b></p>	<p><input type="radio"/></p> <p>Assessment plan is not implemented.</p>	<p><input type="radio"/></p> <p>Most aspects of plan are being implemented or all aspects are implemented to some degree.</p>	<p><input type="radio"/></p> <p>Assessment plan is fully implemented.</p>	<p><input type="radio"/></p> <p>Plan is faithfully executed and modified/evaluated as needed.</p>

2

Explanations:

3

**Engagement**

	1	2	3	4
<p><b>Are all relevant parties are meaningfully involved in the creation/revision, implementation, analysis, interpretation and learning improvement process?</b></p>	<p><input type="radio"/></p> <p>Limited involvement beyond chair/director</p>	<p><input type="radio"/></p> <p>All educators contributing to the curriculum are aware of process and results</p>	<p><input type="radio"/></p> <p>All educators contributing to the curriculum participate in conversations regarding the use of assessment data to improve student learning</p>	<p><input type="radio"/></p> <p>All relevant stakeholders (students, employers, alumni) are meaningfully involved in the creation/revision, implementation, analysis, interpretation, and/or improvement processes associated with this assessment plan.</p>



4 Explanations:

5

### Program Learning Objectives

	1	2	3	4
<b>Are the program learning objectives clear, measurable, aligned with ULOs/GLOs, and representative of the range of learning for that major/program?</b>	<p style="text-align: center;">○</p> <p>PLOs are problematic (vague, abstract, not aligned with ULOs/GLOs) or missing.</p>	<p style="text-align: center;">○</p> <p>PLOs are clear, mostly measurable, partially aligned with ULOs/GLOs.</p>	<p style="text-align: center;">○</p> <p>PLOs are clear, measurable, aligned with ULOs/GLOs, and represent a summary of the knowledge, skills, beliefs, and values that a graduate of this major/program should attain by completing the required curriculum, accounting for variations in learning outcomes due to tracks/concentrations</p>	<p style="text-align: center;">○</p> <p>PLOs are clear, measurable, aligned with ULOs/GLOs, and representative of the range of learning students achieve through completion of the program. The learning objectives provide a comprehensive view of the knowledge, skills, beliefs, and values that are important for a graduate of this major/program and account for variations in learning outcomes due to tracks/concentrations.</p>

6 Explanations:

7

### Measures

	1	2	3	4
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	1	2	3	4
<p><b>Are the instruments used to assess learning relevant to the objective? Do measures yield information/data you can use to drive improvement?</b></p>	<p>○</p> <p>Not all objectives have a measure identified. OR Measures do not directly connect to the objectives.</p>	<p>○</p> <p>All objectives have at least one direct measure. Measures connect to learning objectives superficially or tangentially and/or include learning other than stated objectives. Relies almost exclusively on the same form of assessment (survey, exam, project). Relies almost exclusively on data from a single source (course, program, activity).</p>	<p>○</p> <p>All objectives have at least one direct measure. Some objectives have multiple measures. Measures clearly connect to learning objectives. And two of the following four criteria: Objective measures more than one point in time (formative). Indirect measure are used strategically. Plan Incorporates different forms of assessment (survey, exam, project). Plan incorporates from a variety of sources (course, program, activity).</p>	<p>○</p> <p>Measures meet all of the following criteria: All objectives have at least one direct measure. Some objectives have multiple measures. Measures clearly connect to learning objectives. Objectives measured more than one point in time (formative). Indirect measures are used strategically. Plan incorporates different forms of assessment (survey, exam, project). Plan incorporates data from a variety of sources (course, program, activity).</p>

8 Explanations:

9 **Targets**

	1	2	3	4

	1	2	3	4
<p><b>Are the targets based on professional standards and/or analysis of past student work? Are targets challenging and achievable?</b></p>	<p>Some targets are missing.</p>	<p>Targets are arbitrarily chosen or reflect minimal expectations.</p>	<p>Targets are challenging and achievable based on prior student performance, and reflect an appropriate level of performance.</p>	<p>Targets are challenging and achievable. Targets are based on professional standards and/or prior student performance. Targets are set at a level to inspire program improvement.</p>

10 Explanations:

11 **Timeline**

	1	2	3	4
<p><b>Is the timeline for data collection manageable with sufficient data points to effectively inform decision making and program review?</b></p>	<p>Not identified clearly for all measures.</p>	<p>Clearly states semester/year for each objective/measure. Data analysis delayed from data collection. Time between collection points may not facilitate informed decision making.</p>	<p>Clearly stated and manageable schedule. At least two data points for each objective per review cycle.</p>	<p>Timeline for data collection is manageable and allows for continuous improvement with timely and meaningful decision making even before program review.</p>

12 Explanations:





**Action Plan**

	1	2	3	4
<p><b>Is the department effectively examining and using assessment data to revise curriculum and pedagogy to support student learning?</b></p>	<p>○</p> <p>Assessment data not collected/analyzed/used for decisions and/or results not documented in AEFIS.</p>	<p>○</p> <p>Data collected, documented and discussed by department. Department reviewed confidence in measures and data as sufficient indicators of student performance. If data indicated changes were needed, action plans were developed in consultation with dean (e.g. improving outcomes, measures, targets, curriculum or pedagogy).</p>	<p>○</p> <p>Data collected, documented and discussed by department. Department and dean confirmed confidence in measures and data as sufficient indicators of student performance. Action plans (e.g. improving outcomes, measures, targets, curriculum or pedagogy) developed in consultation with dean. If prior year data warranted action plans, the department implemented the changes.</p>	<p>○</p> <p>Department collected and discussed follow-up data after the implementation of action plans in order to determine whether changes resulted in improvement or whether additional action is necessary. Data confirms effective curriculum and pedagogy for learning outcomes. Score of 4 should be assigned only if objectives, measures, targets and timeline all score a 4.</p>

14 Explanations:

15 **Dissemination**

	1	2	3	4

	1	2	3	4
<p><b>Is the department communicating learning objectives, results and improvements related to student learning to a wide audience?</b></p>	<p></p> <p>No record of assessment results and changes made as a result of assessment findings.</p>	<p></p> <p>The department/program retains records of assessment results and positive changes made as a result of assessment findings, and results are entered in assessment software system.</p>	<p></p> <p>The department/program retains records of assessment results and changes made as a result of assessment findings, results are entered in assessment software system, and assessment results and improvements are publicly posted.</p>	<p></p> <p>The department/program retains records of assessment results and changes made as a result of assessment findings, and results are entered in assessment software system. Assessment results and improvements are publicly posted and shared proactively with faculty, prospective students, employers and alumni in ways that facilitate their discussion.</p>

16 Explanations:

### Additional Feedback

1 Please enter any additional feedback for changes that should be made:

CLOSE AND EXIT