

# BSBME, Biomedical Engineering

 Program-1274

## Annual Assessment Plan

1

**2 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.

- 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.

Measures	Targets	Timeline
Students complete a software module for the CAD software of their choice (to be aligned with their future discipline). This learning is done via software tutorials outside of class with no direct instruction, modeling the way new software might be learned in professional practice.	80% of students score 80% or better on the exam	ENGR 112 - Spring 2021
ELI assessment question: describe two transferable skills acquired during the experience.	100% of students score 3 out of 4 points or better	ENGR 302 - Fall 2020 7A
ELI question: Identify a skill area in need of growth.	100% of students score 3 out of 4 points or better	ENGR 302 - Fall 2020 7C

Measures	Targets	Timeline
Device testing plan assignment (write a device testing plan using ISO standards).	80% of students score 27 out of 30 points or better	ENGR 432 - Spring 2021: This course was not taught during FY22. Action plan will be addressed when the course is taught Fall 2022.

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 112 S21:** (Instructor Observations) Overall, the 77% of the students were at a final exam grade of 80% or above. While technically this is below the target, given the special difficulties of this semester, I do not propose any changes and suggest looking again in the next assessment cycle. (Dept Observations) Agreed that this was a difficult learning environment (remote students, etc.) and therefore we are not proposing action at this time. We observe that many students are not carefully following all steps of learning tutorials (that phenomenon exists beyond this course module). All three of these software packages are reinforced later in the curriculum in their respective disciplines.

**ENGR 302 F20 7A:** (Instructor Observations) 88% of the students demonstrated proficiency. Some of the students who did not demonstrate proficiency failed to follow the instructions to use specific examples or to tell a brief story rather than merely state generalities. Other students simply wrote responses of inadequate length. Based on this, I suggest two improvements to the assignment. First, we can include examples of Basic, Proficient, and Exemplary responses in the problem statement to give students a better sense of what they are aiming for. Second, we can provide a suggested minimum word count to help clarify the length expectations. (Dept Observations) Concur with the instructor's observations.



**ENGR 302 F20 7C:** (Instructor Observations) 84% of the students demonstrated proficiency. Some of the students who did not demonstrate proficiency failed to follow the instructions to use specific examples or to tell a brief story rather than merely state generalities. Other students simply wrote responses of inadequate length. Based on this, I suggest two improvements to the assignment. First, we can include examples of Basic, Proficient, and Exemplary responses in the problem statement to give students a better sense of what they are aiming for. Second, we can provide a suggested minimum word count to help clarify the length expectations. (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 112 S21:** This module has been done entirely outside of class time. In the future, provide occasional face to-face touch points for these student cohorts with the module instructor to promote student engagement with the CAD module.

**ENGR 302 F20 7A:** Improve assignment clarity, as described, and re-assess early.

**ENGR 302 F20 7C:** Improve assignment clarity, as described, and re-assess early.

- 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 112 S21 Response to Action Plan:** Now using "GraderWorks" to provide more accountability in the prior course (ENGR 111) to improve student Solidworks skills.

**ENGR 302 F20 7A Response to Action Plan:** In the previous assessment cycle, 100% of students passed because proficiency was defined simply as completing the assignment, and the several ELI questions were all graded with a single score. We decided this target was insufficiently ambitious. In response, we revamped our grading scheme to a 4-point scale (4 = Exemplary; 3 = Proficient; 2 = Basic; 1 = Below Basic), and graded each question individually. We also helped students craft stronger responses by adding the explanation in the prompt about using concrete, specific vignettes.

**ENGR 302 F20 7C Response to Action Plan:** In the previous assessment cycle, 100% of students passed because proficiency was defined simply as completing the assignment, and the several ELI questions were all graded with a single score. We decided this target was insufficiently ambitious. In response, we revamped our grading scheme to a 4-point scale (4 = Exemplary; 3 = Proficient; 2 = Basic; 1 = Below







Basic), and graded each question individually. We also helped students craft stronger responses by adding the explanation in the prompt about using concrete, specific vignettes.

- 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
<b>Is the plan being implemented faithfully and revised as needed?</b>	 Assessment plan is not implemented.	 Most aspects of plan are being implemented or all aspects are implemented to some degree.	 Assessment plan is fully implemented.	 Plan is faithfully executed and modified/evaluated as needed.

### 2 Explanations:

### 3 Engagement

	1	2	3	4

	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 style="text-align: center;">○</p> <p>Limited involvement beyond chair/director</p>	<p style="text-align: center;">○</p> <p>All educators contributing to the curriculum are aware of process and results</p>	<p style="text-align: center;">○</p> <p>All educators contributing to the curriculum participate in conversations regarding the use of assessment data to improve student learning</p>	<p style="text-align: center;">○</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

	1	2	3	4
<p><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>	<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

	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 style="text-align: center;"></p> <p>No record of assessment results and changes made as a result of assessment findings.</p>	<p style="text-align: center;"></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 style="text-align: center;"></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 style="text-align: center;"></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