

Academic Program Assessment Plan

Program: B.S. in Mechatronics

1.1 Student learning outcomes

The ABET Engineering Accreditation Commission has recently proposed revision to Criterion 3, student learning outcomes. These and other revisions will be formally set up for approval on October 20th. With this in mind, we have revised the Program assessment plan for the Department of Mechatronics to be prepared to attain the following student outcomes:

- a) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- b) 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
- c) An ability to communicate effectively with a range of audiences
- d) 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
- e) 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
- f) An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- g) An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

1.2 Methods

Method	Direct / Indirect	Description/Target	Timeline	Person Responsible	Objectives Addressed
Course and Program Outcome Assessment	Direct	<ol style="list-style-type: none">1. The instructors will conduct assessment of course outcomes based on outcome performance criteria rubrics and using a rating score of 1-4.2. Instructors will submit a report of the student outcome in every semester.3. Homework, examinations and projects will be considered as course embedded measures. Based on the analysis of these reports, the department will	Fall and Spring Semester	Designated department faculty	a-g

		<p>conduct outcome assessment in the program level.</p> <p><u>Target:</u> 75 percent of the students will attain a score of 3 and 4 in all outcomes.</p>			
Senior Design project	Direct	<p>Each student will be required to participate in senior design project and write a report, which will be evaluated by an instructor/advisor and a group of judges including faculty members.</p> <ol style="list-style-type: none"> 1. Written Report: Students will be required to submit the report as written documents for examination by the instructor/advisor 2. Oral presentation: Students will also be required to make an oral presentation of the project on senior design day in an open seminar in front of the instructors/advisors, judges and other students and faculty. <p>Senior design project will be evaluated in every semester to measure the student outcomes using an evaluation form and using a rating score of 1-5</p> <p><u>Target:</u> 80% of students will attain a score of 3 and 4 in all outcomes.</p>	Senior year	Designated department faculty	a-g
Internship Industrial employer survey	Indirect	<p>Each semester the university will conduct an internship industrial employer survey. Score range from 1-5 will be used for all Outcomes.</p>	Each Semester	University	a-g
Student Survey	Indirect	<p>A survey form based on program outcomes will be used. Score range from 1-5 will be used for all Outcomes.</p> <p><u>Target:</u> 80% of students will attain a score of 3.5 out of 5 in all outcomes.</p>	Spring Semester, for all Seniors on Senior design day		a-g
Alumni Survey	Indirect	<p>A survey form will be used based on program outcomes. Score range from 1-5 will be used for all Outcomes.</p>	Fall semester	Designated department faculty	a-g

		<u>Target:</u> 80% of students will attain a score of 3.5 out of 5 in all outcomes.			
Employer Survey	Indirect	A survey form will be used based on program outcomes. Score range from 1-5 will be used for all Outcomes. <u>Target:</u> 80% of students will attain a score of 3.5 out of 5 in all outcomes.	General survey to employer and internship participants		a-g

1.3 Outcomes by method

Student learning outcomes	Course and Program Outcome Assessment (D)	Senior Design project (D)	Internship Industrial employer survey (I)	Student Survey (I)	Alumni Survey (I)	Employer Survey (I)
An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	X	X	X	X	X	X
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	X	X	X	X	X	X
An ability to communicate effectively with a range of audiences	X	X	X	X	X	X
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	X	X	X	X	X	X
An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive	X	X	X	X	X	X

environment, establish goals, plan tasks, and meet objectives						
An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	X	X	X	X	X	X
An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	X	X	X	X	X	X