

Institutional Effectiveness
2022-2023

Program: Electrical Engineering BSEE

College and Department: College of Engineering, Electrical Engineering

Contact: Dr. Allen MacKenzie

Mission:

Provide quality undergraduate and graduate education and perform research in the areas of electrical and computer engineering to enhance the competitiveness of our graduates and contribute to economic, scientific, and social development.

Attach Curriculum Map (Educational Programs Only):

Attached Files: See Appendix 1

SLO1: Identify, Formulate, and Solve Engineering Problems

Define Outcome:

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

Assessment Methods:

1. Formative Analysis from some courses.
2. Capstone Assessment (Reviewer)
3. Student Outcome Assessment
4. Senior Exit Survey

Criteria for Success (Thresholds for Assessment Methods):

The raw data from most tools is obtained on a 1-5 scale with 5 being the best score. For the final exam assessment, scores on selected exam questions are reported out of 100%. For comparability, we translate this into a 5-point scale with the formula $X/20$, this translates into an average grade of 60 on the selected exam problems receiving a 3.0, the threshold for acceptability on our 5-point scale.

Our target for each student outcome and each assessment tool is to achieve greater than 3.5 out of 5. We categorize the attainment of each outcome using each assessment tool as:

- Highly Satisfactory (HS) if the rating is 3.75 or above,
- Satisfactory (S) if the rating is between 3.00 and 3.74,
- Unsatisfactory (U) if the rating is less than 3.00.

Link to 'Tech Tomorrow' Strategic Plan:

1.A Experiential Learning

SLO2: Apply Engineering Design To Produce Solutions That Meet Specified Needs

Define Outcome:

Students will demonstrate 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.

Assessment Methods:

1. Capstone Assessment (Survey)
2. Capstone Assessment (Reviewer)
3. Senior Exit Survey

Criteria for Success (Thresholds for Assessment Methods):

1. Capstone Assessment (Survey)
2. Capstone Assessment (Reviewer)
3. Senior Exit Survey

The raw data from most tools is obtained on a 1-5 scale with 5 being the best score. For the final exam assessment, scores on selected exam questions are reported out of 100%. For comparability, we translate this into a 5-point scale with the formula $X/20$, this translates into an average grade of 60 on the selected exam problems receiving a 3.0, the threshold for acceptability on our 5-point scale.

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SLO3: Communicate Effectively

Define Outcome:

Students will demonstrate an ability to communicate effectively with a range of audiences.

Assessment Methods:

1. Capstone Assessment (Survey)

2. Capstone Assessment (Reviewer)
3. Senior Exit Survey

Criteria for Success (Thresholds for Assessment Methods):

1. Capstone Assessment (Survey)
2. Capstone Assessment (Reviewer)
3. Senior Exit Survey

The raw data from most tools is obtained on a 1-5 scale with 5 being the best score. For the final exam assessment, scores on selected exam questions are reported out of 100%. For comparability, we translate this into a 5-point scale with the formula $X/20$, this translates into an average grade of 60 on the selected exam problems receiving a 3.0, the threshold for acceptability on our 5-point scale.

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- Unsatisfactory (U) if the rating is less than 3.00.

SLO4: Recognize Ethical and Professional Responsibilities and Make Informed Judgments

Define Outcome:

Students will demonstrate 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.

Assessment Methods:

1. Capstone Assessment (Reviewer)
2. Senior Exit Survey

Criteria for Success (Thresholds for Assessment Methods):

1. Capstone Assessment (Reviewer)
2. Senior Exit Survey

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SLO5: Teamwork

Define Outcome:

Students will demonstrate 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.

Assessment Methods:

1. Capstone Assessment (Reviewer)
2. Senior Exit Survey

Criteria for Success (Thresholds for Assessment Methods):

1. Capstone Assessment (Reviewer)
2. Senior Exit Survey

The raw data from most tools is obtained on a 1-5 scale with 5 being the best score. For the final exam assessment, scores on selected exam questions are reported out of 100%. For comparability, we translate this into a 5-point scale with the formula $X/20$, this translates into an average grade of 60 on the selected exam problems receiving a 3.0, the threshold for acceptability on our 5-point scale.

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- Unsatisfactory (U) if the rating is less than 3.00.

SLO6: Experiment, Interpret Data, and Use Engineering Judgment

Define Outcome:

Students will demonstrate an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.

Assessment Methods:

1. Laboratory Assessment (through Fall 2020)
2. Student Outcome Assessment (beginning Spring 2021)
3. Senior Exit Survey

Criteria for Success (Thresholds for Assessment Methods):

1. Laboratory Assessment (through Fall 2020)
2. Student Outcome Assessment (beginning Spring 2021)
3. Senior Exit Survey

The raw data from most tools is obtained on a 1-5 scale with 5 being the best score. For the final exam assessment, scores on selected exam questions are reported out of 100%. For comparability, we translate this into a 5-point scale with the formula $X/20$, this translates into an average grade of 60 on the selected exam problems receiving a 3.0, the threshold for acceptability on our 5-point scale.

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- Unsatisfactory (U) if the rating is less than 3.00.

Link to 'Tech Tomorrow' Strategic Plan:

SLO7: Ability To Acquire and Apply New Knowledge

Define Outcome:

Students will demonstrate an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Assessment Methods:

1. Capstone Assessment (Reviewer)
2. Student Outcome Assessment (beginning Spring 2021)
3. Senior Exit Survey

Criteria for Success (Thresholds for Assessment Methods):

1. Capstone Assessment (Reviewer)
2. Student Outcome Assessment (beginning Spring 2021)
3. Senior Exit Survey

The raw data from most tools is obtained on a 1-5 scale with 5 being the best score. For the final exam assessment, scores on selected exam questions are reported out of 100%. For comparability, we translate this into a 5-point scale with the formula $X/20$, this translates into an average grade of 60 on the selected exam problems receiving a 3.0, the threshold for acceptability on our 5-point scale.

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List of Appendices:

Appendix 1: Curriculum Map

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	Student Outcome (SO)		Performance Indicator (PI)	EE Program
SO 1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	PI 1-1	Identify, formulate complex engineering problems	3130, 4050, Capstone
		PI 1-2	solve a complex engineering problem	4050, Capstone
SO 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.	PI 2-1	An ability to apply engineering design to produce solutions that meet specified needs	3050, Capstone
		PI 2-2	The design considers public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	Capstone
SO 3	An ability to communicate effectively with a range of audiences.	PI 3-1	An ability to communicate effectively with a range of audiences (oral presentation)	3920, Capstone
		PI 3-2	An ability to communicate effectively with a range of audiences (written report)	2140, 3050, Capstone
SO 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.	PI 4-1	An ability to recognize ethical and professional responsibilities in engineering situations, make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	3920, Capstone
SO 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.	PI 5-1	An ability to function effectively on a team whose members together, create a collaborative and inclusive environment and meet objectives	3130, Capstone
		PI 5-2	An ability to function effectively on a team whose members together to provide leadership, establish goals, and plan tasks	3130, Capstone
SO 6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	PI 6-1	Develop and conduct appropriate experimentation	3050, Capstone
		PI 6-2	analyze and interpret data	3050, Capstone
		PI 6-3	use engineering judgment to draw conclusions	Capstone
SO 7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	PI 7-1	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	2140, 3330, Capstone