

Program-Level Assessment: Annual Report

Program Name (no acronyms): Computer Engineering

Department: School of Engineering

Degree or Certificate Level: Undergraduate

Major Update Presently In progress

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

3 - an ability to communicate effectively with a range of audiences

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

Historic Outcomes

g - an ability to communicate effectively

f - an understanding of professional and ethical responsibility

h - the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

j - a knowledge of contemporary issues

2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe and identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus,

4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

There is no difference in teaching modality as the majority of these classes only have one section.

For data see results pages – Starting on Page 11.

We assessed a total of 10 samples from 5 assignments of outcome 3. Approximately half of these samples did not meet expectations.

We assessed a total of 18 samples from 5 assignments of outcome 4. Approximately 2/3 of these samples did not meet expectations.

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

For findings see results pages – Starting on Page 11.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

In a meeting on August 18, the results of the assessment activities were discussed. The recommendations were used to determine actions.

To see the determined actions please see attached – Start252.52 53.64 reW nr8f

(3) an ability to communicate effectively with a range of audiences

Historical Outcomes:

- (g) an ability to communicate effectively

TABLE 10 Student Outcome (3) assessment indicators and descriptions.

Indicator	Course	Assessment Description
1. Ability to write a technical report that details a design including the constraints, solution, performance results and conclusions.	ECE3090 ECE4800/ ECE4810	The battery experiment technical report. The PDR, CDR, and/or FDR technrrrrrrrr

4.6 (o)10.9 (r)-48p

- ECE4800/ECE4810: *Students will demonstrate an ability to write and deliver an effective presentation as evidenced by the presentation written and delivered for the PDR, CDR, or FDR.*

The assessment rubrics are given in the following table

TABLE 11 Assessment rubrics for Student Outcome (3).

	Rubric		
In d	1 = Does not meet Expectations	2 = Meets expectations	3 = Exceeds expectations

There is evidence that the technical presentation exhibits one or fewer of the following:

(a) is mostly well organized by containing a logical thought progression by beginning with a title slides, outlines/goals, design definition, followed by appropriately sequenced technical details, and ends with a summary/conclusions,

3 (b) contains appropriate design technical details such as a well conceived design solution, sufficient technical details to assess the feasibility of the solution, and containing critical issues,

(c) the speakers spoke clearly, chose effective words, demonstrated a command of the technical material, and answered questions effectively and clearly.

There is evidence that the technical presentation exhibits 2 of the following:

(a) is mostly well organized by containing a logical thought progression by beginning with a title slides, outlines/goals, design definition, followed by appropriately sequenced technical details, and ends with a summary/conclusions,

(b) contains appropriate design technical details such as a well conceived design solution, sufficient technical details to assess the feasibility of the solution, and containing critical issues,

(c) the speakers spoke clearly, chose effective words, demonstrated a command of the technical material, and answered questions effectively and clearly.

There is evidence that the technical presentation exhibits all three of the following:

(a) is mostly well organized by containing a logical thought progression by beginning with a title slides, outlines/goals, design definition, followed by appropriately sequenced technical details, and ends with a summary/conclusions,

(b) contains appropriate design technical details such as a well conceived design solution,

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(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

Historical Outcomes:

- (f) an understanding of professional and ethical responsibility
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (j) a knowledge of contemporary issues

TABLE 12 Student Outcome (4) assessment indicators and descriptions.

Indicator	Course	Assessment Description
ECE4800/4810		
1. Ability to understand professional ethical responsibility	ECE4800/ ECE4810	Written analysis of Ethical case studies case study
2. Ability to understand the environmental impact of an engineering design.	ECE4800/ ECE4810	Write a PDR, CDR, and/or FDR reports.
3. Ability to understand the economic impact of an engineering design.	ECE4800/ ECE4810	Write a PDR, CDR, and/or FDR reports.
4. Ability to identify current trends in professionally-related industries.	ECE1001	Summarize a technical paper involving current trends in battery technology.
	ECE4800/ ECE4810	Exhibit through technical details found in the Project

- ECE4800/ECE4810: *Student will demonstrate an understanding of professional and ethical responsibility as evidenced by a written response to a position paper on an ethical case study.*

This outcome refers to an ability to understand the impact of engineering solutions in a broader context.

Indicator #2: This indicator refers to an ability to understand the environmental impact of an engineering design.

- ECE4800/ECE4810: *Students will demonstrate an ability to understand the environmental impact of an engineering design as evidenced in the project notebooks, technical reports, or technical presentations.*

Indicator #3: This indicator refers to an ability to understand the economic impact of an engineering design

ECE4800/ECE4810: *Students will demonstrate an ability to understand the economic impact of an engineering design as evidenced in the project notebooks, technical reports, or technical presentations.*

This outcome refers to an ability to identify and converse about contemporary issues, such as battery technology for the electric car industry, renewable energy resources and their impact on the environment, or cybersecurity in a world heavily reliant on the internet.

Indicator #4: This indicator refers to an ability to identify current trends in professionally-

TABLE 36 Assessment for Student Outcome (3).

Ind	Artifact Value	Material Assessed	Observations	Recommendations
ECE3090				
1	1. 1 2	Battery experiment report	<p>1. The report has no visuals, schematics, tables, plots and the like. There is no procedure section. I do not know what battery they measured or what R value they obtained.</p> <p>2. Their use of references is not correct, rather than referring to material they are describing the papers. They also have no visuals. They discuss a set of equations, but do not present them. Again there are no results</p> <p>-----</p>	<p>It appears the assignment as assigned did not produce the results we said we were going to look for. The assignment needs to be changed or a new indicator needs to be chosen.</p> <p>-----</p> <p>1& 2. A circuit diagram and relevant equations in the solution section would make technical explanations clear.</p>
	2. 1 2			
	3. Only two artifacts collected			
3	1. 2 3	Battery experiment presentation	<p>1. There presented circuit does not show how (where) current was measured. I do not understand (A frequency that would short the circuit). They spoke over a lot of experimental/math details without visuals. They measured their wires, but did they measure the resistance of their setup without batteries?</p> <p>2. They spoke to, but did not investigate variation in experiment setup. es.2 (3t) .BT0.00QTc</p>	

There is no engineering presentation in this material

1. 1

2

TABLE 39 Assessment for Student Outcome (4).

Ind	Value	Material Assessed	Observations	Recommendations
ECE1001				
1	1. 3 3 Blank	ECE 1001 Battery Paper Summary	1. The grammar and structure is a little off, but they did highlight trends in automotive battery use	<p>Make sure the students know this is to be a "paper", Subject supporting material, conclusion and the like.</p> <p>Should we have them look for articles that include more parts of outcome four.</p> <p>----- No Recommendations -----</p> <p>May need more instructions and sample paper to follow.</p>
	2. 3 3 Blank		2. The grammar and structure is off, but they did high-light current difficulties and possible solution to lithium battery design and manufacture	
	3. 1 1 Blank		<p>3. This writing is short enough so as to not convey much information. The information conveyed is random disconnected bits</p> <p>-----</p> <p>No Observations</p> <p>-----</p> <p>Considering students being freshman, they have done a good job.</p>	

TABLE 40 Assessment for Student Outcome (4).

Ind	Value	Material Assessed	Observations	Recommendations
2020-2021 DC 38261 2 1261 (1)				

Application 2. They also presented a one sided benefit analysis.

3. They made a strong argument for the need of their product, but there are no environmental impact statements (as related to nature)

There were societal impact statements, but no environmental

3. 1
N/A
3

No one did a life cycle cost analysis of their design

The table of contents in the FDRs do not include this indicator.

In the Final Design Review report students show a clear understanding of engineering product and practice. Continue to emphasis

TABLE 38 Improvement Plans for Student Outcome (3).

Ind	Observations Drawn From Course / Indicator	Improvements
1	ECE 3090 Battery Report Format -----	

