ELECOMP Capstone Design Program
ABET Student Outcomes

Fall 2020 Semester

Outcome 1: (ELE480-Fall 2020) : An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics

The emphasis seems to be on solving a problem that meets the definition of complex, i.e., having one or more of the following characteristics:

- Wide ranging technical issues
- Conflicting technical issues (trade-offs)
- Having no obvious solutions
- Not covered by current standards or codes
- Involving diverse groups of stakeholders
- Many component parts or sub-problems
- Involving multiple disciplines

**Evaluation:** From the Grading Breakdown, each designer’s score for the Individual Technical Contributions in the Major Progress Report, MPR #2, will be taken into account; it reflects one or more of the above characteristics in their capstone project. The maximum score is 40%. This will be divided by 8, rounded to the nearest digit, and the score will be loaded on the department website, for tracking this Outcome, and providing data for the ABET Evaluators. (no extra work is required)

Outcome 3 (ELE480-Fall 2020) : ability to communicate effectively with a range of audiences [it is the program’s responsibility to determine the most meaningful audiences. Sample audiences: faculty, students, non-technical, public sector, engineering manager.]

**Evaluation:** From the Grading Breakdown, each designer’s total score will be determined for written and oral communication skills: the slides preparation, and the oral presentation, for the Virtual Symposium. The maximum score is 25%. This will be divided by 5, rounded to the nearest digit, and the score will be loaded on the department website, for tracking this Outcome, and providing data for the ABET Evaluators. (no extra work is required)

Outcome 5 (ELE480-Fall 2020) : an ability to function effectively on a team whose members together 1- provide leadership, 2-create a collaborative and inclusive environment, 3-establish goals, 4-plan tasks, and 5-meet objectives

**Evaluation:** Jack Murphy will send a Google Form, on 12/14/20, to get self-evaluation by each designer, only on these two aspects: (1) Leadership and (2) Collaborative and inclusive environment. (Tasks 3, 4 and 5 are already included in Outcome 1 above) Suitable questions will be posed and the answers will be evaluated out of 5%, with no effect on the final score, for the course grade. The individual score, 1 through 5, will be loaded on the department website, for tracking this Outcome, and providing data for the ABET Evaluators.
**Fall 2020 & Spring 2021 Semesters**

**Outcome 2 (ELE480 and ELE481):** an ability to apply engineering design to produce solutions that meet specified needs with consideration of: 1-safety (health and welfare), 2-global, 3-cultural, 4-social, 5-environmental, 6- economic factors.

Must show all six factors are considered as they engage in the design process.

Also, the following elements of design must be incorporated:

1-identifying opportunities, 2-developing requirements, 6-considering risks, 7-making trade offs

*Evaluation:* Appendix A in MPR#2 and CPR; see below.

**Outcome 4 (ELE480 and ELE481):** ability to recognize ethical and professional responsibilities in engineering situations AND

Make informed judgements, which must consider the impact of engineering solutions in: 1-global, 2-economic, 3-environmental, and 4-social contexts.

(combine with Outcome 2 as the six considerations in Outcome 2 include the 4 considerations in Outcome 4)

*Evaluation:* Appendix A in MPR#2 and CPR; see below.

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**Appendix A in Major Progress Report #2 (MPR#2) & Comprehensive Progress Report (CPR)**

(Initial Answers to be provided in MPR#2; Further updates/final evaluations to be provided in CPR)

Identify the Page numbers in the Reports, that address these Elements of Design, IF these apply to your project. If these are no available in the Report, discuss briefly in this Appendix, under the appropriate Heading:

1. Identifying Opportunities (Project Motivation)
2. Developing Requirements (Functional Specifications in the ABO)
3. Risk Evaluation to achieve the ABO
4. Making Design Trade-offs
5. Safety Considerations (health and welfare)
6. Local & Global Implications and Impact
7. Cultural Implications and Impact
8. Social Implications and Impact
9. Environmental Implications and Impact
10. Economic Implications and Impact
11. Ethical Implications and Impact.

*EVALUATION:* The same score, out of 5, will be assigned to each designer in the team, and the score will be loaded on the department website, for tracking these 2 Outcome, and providing data for the ABET Evaluators.