

The EE and CENG curricula have “**Objectives and Outcomes**” listed on the EE main web page at <http://ee.hawaii.edu>  
EE 496 posters should cover outcomes 1, 2, 3, 4, 5, 6, 7.

Outcome 1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

Performance (Weight)	Unsatisfactory (0)	Marginal (1)	Satisfactory (2)	Exemplary (3)
a) <b>Identify and formulate engineering problems</b>	Unable to identify engineering problems in an assignment or project.	Can identify and formulate at least half of the engineering problems in an assignment or project.	Can identify and formulate all of the engineering problems in an assignment or project.	Can identify and formulate all of the problems in an assignment or project, and can integrate their solutions effectively.
b) <b>Solution strategy for complex engineering problems.</b>	Has no solution strategy.	Can formulate some solution strategies but requires guidance to find strategies and solutions.	Develops and follows acceptable solution strategies. Able to solve moderately difficult engineering problems.	Develops and follows efficient strategy leading to correct solutions. Able to solve complex engineering problems.

Outcome 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.

Performance (Weight)	Unsatisfactory (0)	Marginal (1)	Satisfactory (2)	Exemplary (3)
a) <b>An ability to apply engineering design to produce a solution that meets specified needs</b>	Unable to apply engineering design to produce a solution that meets specified needs	Able to follow a provided design strategy to produce a solution that meets specified needs	With some guidance, can develop and follow a design strategy to produce a solution that meets specified needs	With little or no guidance, can develop and follow a design strategy to produce a solution that meets specified needs
b) <b>An ability to produce solutions that meet specific needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.</b>	Unable to produce a solution that considers public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	With complete guidance, can produce a solution that considers public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	With some guidance, can produce a solution that considers public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	With little or no guidance, can produce a solution that considers public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
c) <b>An ability to apply engineering design to produce a high quality solution</b>	Unable to apply engineering design to produce a solution that meets specified needs	Able to apply engineering design to produce a solution that meets specified needs but the solution is not of high quality	Able to apply engineering design to produce a high quality solution that meets specified needs; and is able to analyze the quality of the solution	Able to apply engineering design to produce multiple solutions that meets specified needs; able to analyze the quality of the solutions; and able to choose the best solution based on analysis

Outcome 6. An ability to develop and conduct experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

<b>Performance (Weight)</b>	<b>Unsatisfactory (0)</b>	<b>Marginal (1)</b>	<b>Satisfactory (2)</b>	<b>Exemplary (3)</b>
<b>a) Experiment development</b>	Unable to develop experiments. Has no knowledge of scientific methods, procedures, and tools	Able to develop experiments only with assistance. Knows some scientific methods, procedures and tools	Able to develop simple experiments without assistance. Understands and uses proper scientific methods, procedures, and tools	Able to develop more complex experiments, with little or no assistance. Understands and uses proper scientific methods, procedures and tools;
<b>b) Experiment execution</b>	Unable to conduct experiments. Has to rely on other students or the instructor for the simplest of measurements	Able to conduct experiment by following instructions, but is unable to modify/adapt if unanticipated issues arise	Able to perform experiments with some degree of independence; Has basic ability to modify/adapt if problems arise.	Able to perform the experiments without any detailed instructions, and has the ability to independently resolve problems if they arise during execution
<b>c) Data collection, and analysis</b>	Unable to gather any meaningful data. Is unaware of the concept of inaccuracy. Sees no need in data analysis. Reports purely unprocessed data, where clearly spurious results are never recognized.	Able to collect very basic data. Is aware of some inaccuracies, and occasionally identifies some artifacts. Applies data analysis with major errors	Able to collect most of appropriate data. Is aware of most artifacts, errors, and is able to identify them. Knows how to apply data analysis techniques satisfactorily	Able to collect data, and is able to identify causes of inaccuracy, artifacts and errors; Can occasionally suggest solutions. Has good knowledge of data analysis, and applies them well
<b>d) Interpretation, and conclusion</b>	Unable to interpret the data collected in the experiment. Makes no or erroneous conclusions	Able to interpret some data, but with significant errors in interpretation and conclusions	Able to correctly interpret most of the data; Exercises engineering judgment and most conclusions are correct or appropriate.	Able to correctly interpret most of the data, errors, artifacts, and occasionally can suggest solutions to improve. Makes correct interpretations, and demonstrates good engineering judgment to arrive at conclusions.

### Instructions

If you are unable to judge a project on a criteria, enter “N.” Not all projects are required to consider all outcomes. For example, some projects require use of lab equipment, while others do not. For the latter just enter “N.” However, it is your responsibility as a judge to evaluate if lab equipment is relevant to the project. If the project should have considered use of lab equipment, but the poster or presentation does not address it, the right grade is 0, not “N.”

Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program.

The purpose of the form is to assess the attainment of these outcomes. The evaluation will not influence the students’ grades, which are determined by the faculty advisors. The evaluation will be used in the ABET process to continuously improve its curriculum.