

**ESE SENIOR DESIGN COURSE OUTCOMES:** skills, knowledge, and behaviors that ESE senior students are expected to have attained by the end of the two-semester senior design sequence.

<b>a. an ability to apply knowledge of mathematics, science, and engineering</b>
A1. Application of knowledge from mathematics, science, computer programming and engineering appropriate to the approved project.
<b>b. an ability to design and conduct experiments, as well as to analyze and interpret data</b>
B1: Design of test strategy, conduct test(s) and evaluate test results appropriate to the approved project.
B2. Design and implementation of an effective formal project demonstration.
<b>c. an ability to design a system, component, or process to meet desired needs within realistic constraints</b>
C1. Identify specific project objectives from general project requirements.
C2. Prepare an effective project schedule.
C3. Execute engineering design to specifications and constraints relevant to the project.
<b>d. an ability to function on multi-disciplinary teams</b>
D1. Sub-divide and distribute project work effectively among team members.
D2. Integrate effectively individual team contributions to complete the approved project
<b>e. an ability to identify, formulate, and solve engineering problems</b>
E1. Define a project and prepare a project proposal.
E2. Analyze alternative designs or options for their design.
E3. Chose best design or design option based on technical evaluation or other relevant considerations.
E4. Solve practical engineering problem(s).
<b>f. an understanding of professional and ethical responsibility</b>
F1. Understand the ethical issues relevant to the approved project
F2. Recognition that valuable lessons are learned in every project.
<b>g. an ability to communicate effectively</b>
G1. Prepare and deliver effective oral presentations using PowerPoint.
G2. Prepare effective formal project reports.
G3. Respond to effectively to audience Q&A during a formal presentation.
G4. Communicate effectively in team project reviews
G5. Conduct effective formal project demonstration to judges, faculty and peers.
<b>h. the broad education necessary to understand the impact of engineering solutions in global, economic, environmental, and societal context</b>
H1. Relate the global, economic and/or societal context of the approved project.
<b>i. a recognition of the need for, and an ability to engage in life-long learning</b>
I1. Use information resources to acquire background information for the approved project.
<b>j. a knowledge of contemporary issues</b>
J1. Demonstrate knowledge of contemporary issues appropriate to the approved project.
<b>k. an ability to use the technique, skills and modern engineering tools necessary for engineering practice</b>
K1: Use of techniques, skills and modern engineer tools appropriate to the approved project.