



BAKER COLLEGE
STUDENT LEARNING OUTCOMES

EGR 4920 Senior Design Project
2 Semester Hours

Student Learning Outcomes & Enabling Objectives

1. Manage an engineering design project based on the knowledge of project management techniques: project scheduling, budget and resource planning and staffing for the project.
 - a. Analyze external forces affecting the development and outcome of a typical design project.
 - b. Select the most cost effective and least time consuming manufacturing methods to manufacture mechanical components that were designed, based on the knowledge of manufacturing processes.
 - c. Estimate engineering design worth and evaluate the impact of the design worth on the project's budget using techniques learned in engineering economy.

 2. Design a few mechanical components of the selected design using concepts learned in the appropriate engineering courses, such as: Mechanical Design, Solid Mechanics, Material Science, Kinematics, Vibrations, Dynamic Systems and Control, etc.
 - a. Predict ergonomic and/or safety factors affecting design. Propose the optimum human – machine interface that will satisfy ergonomic and safety factors.
 - b. Predict the performance, reliability and safety of the design performing engineering calculations and available computer technology (CAD, CAM, CAE, FEA or simulation).

 3. Prepare engineering design specifications that will include performance, cost, quality, reliability, safety, ergonomics, sustainability, environmental concerns, materials, manufacturability, time to bring to market, and other “world-class, order winning” criteria.
 - a. Prepare at least 2 design alternatives and evaluate each against the chosen specification criteria and select the best alternative.
 - b. Extend the design considerations to include ethical and cultural diversity considerations.
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These SLOs are not approved for experiential credit.

Effective: Fall 2017