Course: ME 48700 – Mechanical Engineering Design I

Cross-listed Course: ENGR 41000 – Interdisciplinary Engineering Design I

Type of Course: Required for ME program

Catalog Description: The first course of a two-semester sequence of senior capstone design. Provides students with experience in the process and practice of mechanical component/system design from concept through final design. Emphasis on teamwork, project management, testing through simulation or prototype, oral and written communications.

Credits: 3

Contact Hours: 3

Prerequisite Courses: ME 32100 and ME 36900

Corequisite Courses: ME 32200

Prerequisites by Topics: Heat Transfer and Design of Machine Elements

Textbook: None

Course Objectives: To develop capabilities of students to solve real-life problems. Students have to apply knowledge from their previous course work to accomplish projects formulation to prototype evaluation.

Course Outcomes: Students who successfully complete this course will have demonstrated an ability to:
1. Formulate a problem statement. (1, 2)
2. Generate solutions (conceptual designs) using brainstorming technique. (1, 2)
3. Evaluate conceptual designs using well-defined criteria. (1, 2)
4. Obtain a final design including safety, economic, ethical, and engineering standard considerations. (1, 2, 4)
5. Function within a team. (5)
6. Present his/her work both written and orally. (3)

Lecture Topics:
1. Introduction, Capstone Senior Design Guidelines
2. Formulation of problem statement
3. Brainstorming and conceptual designs
4. Evaluation of conceptual designs
5. Detailed design  
6. Discussion related to oral presentations  
7. Oral presentations

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<tr>
<th>Computer Usage</th>
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<tbody>
<tr>
<td>Laboratory Experience</td>
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<td>Design Experience</td>
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<tr>
<td>Coordinator</td>
<td>Hosni Abu-Mulaweh, Ph.D.</td>
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