ME 234: Philosophy of Design (3) Required

Course Description: General approach to the meaning of engineering design. Conceptual blocks, creativity, design process, design considerations and elements. 3 lectures.

Prerequisite Courses: ME 130 and ME 228

Prerequisites by Topic: None


Course Coordinator/Instructor: Saeed Niku, Professor of ME

Course Learning Outcomes:
1. To recognize how mental blocks prevent one from synthesizing original or alternative solutions and designs.
2. To classify methods that overcomes mental blocks.
3. To recognize the benefits of the design process and the issues involved in the design of products and systems.
4. To recognize the role of liability, human factors, safety and economics issues in design.
5. To demonstrate their ability in applying these methods through design projects.
6. To synthesize design solutions for a variety of problems and product needs.

Relationship of Course to MECHANICAL ENGINEERING Program Outcomes:

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Topics Covered:
1. Considerations in Design: weight, size, design standards, material properties, cost, performance, styling, human factors, safety, serviceability, environmental effects, manufacturing processes, and aesthetics.
2. Design Process: search for problems and problem definition, idea generation, preliminary analysis, idea selection, analysis and final design, implementation, and testing.

3. Individual and Team Design Projects: Includes a mid-quarter prototype fabrication, testing, demonstration, and final report.

4. Mental blocks: perceptual, cultural, environmental, emotional, intellectual, expressive, and how to overcome them.


**Laboratory Projects:**
There is no laboratory in this course. However, students design and build a prototype of a project for testing. They also synthesize and present a final design project.

**Class/Lab Schedule:**
Tuesdays and Thursdays, 8:10 to 9:30, 9:40 to 11:00, or 1:40 to 3:00

**Contribution of Course to Meeting the Professional Component:**
(a) College-level mathematics and basic sciences: 0 credits
(b) Engineering Topics: Design 3 credits
(c) General Education: 0 credits
(d) Other: 0 credits

**Prepared by:**
Saeed Niku

**Date:**
9-23-2013