Mechanical Engineering Dept. Department

Syllabus
ME 415: Senior Design Project (3-0-3)

Course Catalog Description:

This capstone design project course integrates various components of the curriculum in comprehensive engineering experience so that the basic sciences, mathematics, and engineering sciences which the student has learned in his freshman-to-senior years of study can be applied. It considers design of a complete project or system including establishment of objectives and criteria, formulation of the problem statements, preparation of specifications, consideration of alternative solutions, feasibility considerations, and detailed engineering designs. The design should take into consideration appropriate multiple realistic constraints such as economic factors, safety, reliability, ethics and environmental and social impact as well as related standards. Submission of a written report is an essential requirement for completion of the course. Team design projects, where appropriate, are highly encouraged.

Course Pre-requisites:

- ME 398: Internship

Course Co-requisites:

- ME 302: Machine Design II
- ME 303: Mechanical System Design Lab

Course Objectives:

1. Students will learn to identify customer needs as well as current global and local demands.
2. Students will learn to write product design specifications with engineering standards and realistic constraints.
3. Students will learn to know how to generate design concept and present them through hand-sketch and CAD tools.
4. Students will learn to acquire and apply necessary new knowledge required to complete their design work.
5. Students will learn to work in teams to analyze and test the design though engineering principles, manage, plan and execute their project tasks and milestones in a collaborative team.
6. Students will learn to produce a functional prototypes of a product or system of their own design and present them in a comprehensive manner. .

Course Learning Outcomes:

CLO1. 1,2

CLO2. 3

CLO3. 4,5

CLO4. 7

Learning Resources:

- Product Design and Development Handbook An Innovative, Entrepreneurial, and Structured Approach for Engineering Capstone and Industry Projects (First Edition) Steven W. Trimble and Abdelrahman N. Shuaib
- Lecture notes and slides to be posted in Blackboard.

Lecture Assessment Plan:

Assessment Task	Week Due	Weight
Course Coordinator - Submission of Progress Report	12	4.0%
Course Coordinator - Attendance	15	10.0%
SDP Project Adviser - Evaluation Form	15	75.0%
Course Coordinator - Assignment 1: Project Design Method	6	5.0%
Course Coordinator - Assignment 1: Project Design Method	7	6.0%

Lecture Weekly Schedule:

Week#	Topics
1	Introduction about the course
	Ethics, Standards and Codes, Constraints and Contemporary Issues
2	Ethics, Standards and Codes, Constraints and Contemporary Issues (Continue)
	Entrepreneurship, Marketing and Market Research
3	Patents & Copyrights
	Product Design Process
4	Product Design Process (Continue)
	Prototyping
5	Project Management
	Effective Communication
6	Student SDP Project Independent Work
7	Student SDP Project Independent Work (Continue)
8	Student SDP Project Independent Work (Continue)
9	Student SDP Project Independent Work (Continue)
10	Student SDP Project Independent Work (Continue)

Week#	Topics
11	Student SDP Project Independent Work (Continue)
12	Student SDP Project Independent Work (Continue)
13	Student SDP Project Independent Work (Continue)
14	Student SDP Project Independent Work (Continue)
15	Student SDP Project Independent Work (Continue)