Course ENGR 19900 – Introduction to Engineering Design

Type of Course Required for all undergraduate engineering programs

Catalog Description This course introduces the engineering design process as a heuristic approach. Techniques for defining problems, generating solutions and deciding between them are used to set up and solve design problems that are analyzed by students using fundamental engineering principles. Computer modeling of systems is introduced for use in design. Students learn both written and oral technical communication skills by presenting their engineering work and conclusions in the form of reports and oral presentations.

Credits 3

Contact Hours 3

Prerequisite Courses ENGR 101

Corequisite Courses ENGR 121 and PHYS 152

Prerequisites by Topics An introduction to the engineering profession and mathematical, physics, and computer sophistication; may be taken concurrently with integral calculus, mechanics, and computer tools courses.


Course Objectives To introduce students the engineering design process. To teach students to work on teams and manage technical projects. To hone students’ written and oral technical communication skills by requiring them to present their engineering work and conclusions in the form of reports and oral presentations.

Course Outcomes Students who successfully complete this course will have demonstrated an ability to:
1. Apply the stages of the engineering design process to develop innovative and practical solutions to technical problems (a, c, e).
2. Work effectively in project teams by establishing common goals, equitable workloads, a framework for mutual accountability,
strong communication linkages, and a collegial environment based upon mutual trust and respect (d).

3. Present various project results in effective written and graphical formats, and through informative oral presentations (g).

4. Evaluate ethical issues in engineering practice in terms of NSPE’s Code of Ethics (f) and apply techniques in failure analysis and hazards analysis to engineering systems (a, e, h).

Lecture Topics

1. Design Process
2. Technical Memos
3. Project Management
4. Tech. Analysis/Modeling
5. Oral Presentation
6. Engineering Economics
7. Ethics, Hazard & Failure Analysis
8. Exam

Computer Usage

Medium

Laboratory Experience

None

Design Experience

High

Coordinator

Scott Moor, Ph.D., P.E.

Date

10 May 2011