

EEO 441: Engineering Design II **Spring 2017**

Catalog Description:

This is a two-semester, year-long capstone design project in which students acquire a culminating design experience by working under the supervision of a faculty member on a design project that involves realistic constraints including economic, environmental, sustainability, manufacturability, ethical, health, and safety, social, and political factors. In most cases, in the fall (EEO 440), students investigate and finalize the design aspect whereas in the spring (EEO 441), implementation and testing are carried out. Projects are solicited from industries and faculty members, and to the extent possible, mentored by professional engineers. Two comprehensive technical reports (one for EEO 440 and one for EEO 441) and an oral presentation are required.

Prerequisites: EEO Major
Credit Hours: 3

Instructor: Tatianna Tchoubar

Goals: The goal of the lecture component is to expose students to various engineering design, disciplines, professional and ethics issues of Electrical and Computer Engineering and provide an opportunity for students to practice oral communication skills. The goal of the project component is to provide students with hands-on design and team work experience that incorporates appropriate engineering standards and multiple realistic constraints.

Student Learning Objectives: Upon completion of the course, students will have

- demonstrated skills in engineering design, implementation and testing
- some knowledge of contemporary issues;
- an awareness of the importance of lifelong learning
- practiced communication skills
- an increase ability or awareness on how to function effectively in multi-disciplinary teams.

Course Schedule

No	Week of	To do	Lecture title
1	23 Jan	Read the Syllabus. Send your E-Portfolio link and start the Blackboard Collaboration discussion	SYLLABUS.
2	30 Jan	Participate in the BB Collaboration discussion	Ch. 18, 19 Technical Communication (TC): TECHNICAL DEFINITIONS, DESCRIPTIONS, & SPECIFICATIONS for Overall Project Written

			Communications
3	6 Feb	Write progress report in your E-Portfolio (Digication)	Ch. 10, 11 in TC: ORGANIZING INFORMATION FOR READERS. EDITING FOR A PROFESSIONAL STYLE AND TONE for Overall Project Written Communications
4	13 Feb	Submit in Assignments the final text of Section 2 in your Project Report	Review Ch. 2 in Design for Electrical and Computer engineers by Ford (DECE): Project Selection and Needs Identification
5	20 Feb	Continue participating in the BB Collaboration discussion	Ch. 12 in TC: DESIGNING VISUAL INFORMATION for Overall Project Visual Communications
6	27 Feb	Submit in Assignments final text of Section 3.1, 3.2 in your Project Report	Review Ch.3, 4 in DECE: The Requirements Specification, Concept Generation and Evaluation
7	6 Mar	Submit in Assignments final text of Section 3.3 of Project Report (PR)	Review Ch.5, 6 in DECE: System Design
	13 Mar	Spring Break	Spring Break
8	20 Mar	Submit in Assignments Section 4.1, 4.2 of PR	PROJECT IMPLEMENTATION (Ch.10, Appendices C, D in DECE)
9	27 Mar	Submit in Assignments Section 4.3 of PR	PROJECT TESTING (Ch.7 in DECE)
10	3 Apr	Digication	E-Portfolio (Final Project Progress)
11	10 Apr	In BB Discussions	BB Collaboration Term Paper Draft (no lecture)
12	17 Apr	Submit in BB Section 5 of PR, Results and Discussions	PROJECT CASE STUDY (Appendix E, Ch. 8, 9, 11 in DECE)
13	24 Apr	STUDENT PRESENTATIONS OF FINAL PROJECT	Ch. 24, 3 in TC: ORAL PRESENTATIONS AND WEBINARS, PERSUADING YOUR AUDIENCE
14	1 May		Term Paper Due (no lecture)

Assessed Student Outcomes

- (a) an ability to apply knowledge of mathematics, science and engineering
- (b1) an ability to design and conduct experiments
- (b2) an ability to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice