# EEO 440: Engineering Design I

## Fall 2016

**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. 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

**Instructor:** Tatianna Tchoubar

**Goals:** The goal of the lecture component is to expose students to various design Issues, disciplines, professional and ethics issues of Electrical and Computer engineering. 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 increased ability or awareness on how to function effectively in multi-disciplinary teams.

Course Schedule Fall 2016*

| No | Week of | To do | Lecture title, chapter from Textbook |
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| 1 | 29 Aug | Read the Syllabus and Project Written Report Format in BB Documents | SYLLABUS |
| 2 | 5 Sept | Participate in the BB | No lecture: asynchronous online discussion in Blackboard |

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| | | discussion of Syllabus, Q&A<br>Contact your advisor to discuss your senior project | |
| 3 | 12 Sept | Read Ch.1 by Ford | ENGINEERING DESIGN PROJECT PROGRESS<br>Ch.1 in Design for Electrical and Computer Engineers |
| 4 | 19 Sept | Assignment #1 on Lifelong learning, due in BB | No lecture: 1 page Reflection Paper is due in BB Assignments |
| 5 | 26 Sept | Listen to the Textbook MyWritingLab podcast. | MEETING THE NEEDS OF SPECIFIC AUDIENCES<br>Ch.2 in *Communication for Engineers…* |
| 6 | 3 Oct | Participate in the BB discussion of Ch.2 | No lecture: asynchronous online discussion in Blackboard |
| 7 | 10 Oct | Readings in BB Documents | ENGINEERING, ECOLOGY, AND ECONOMICS |
| 8 | 17 Oct | Write Section 1 in Project Report, Goal and Impact | No lecture: Reflection Paper (Section 1 outline for the Project Report) is due in BB Assignments |
| 9 | 24 Oct | Listen to the Textbook MyWritingLab podcast. | MULTI-DISCIPLINARY TEAMWORK AND GLOBAL CONSIDERATIONS<br>Ch.5 in *Communication for Engineers…* |
| 10 | 31 Oct | Participate in the BB discussion of Ch.5 | No lecture: asynchronous online discussion in Blackboard |
| 11 | 7 Nov | Create your ePortfolio | Online E-Portfolio with your Project Progress |
| 12 | 14 Nov | Read Ch.2 by Ford | DESIGN OBJECTIVES, CONSTRAINTS, STANDARDS<br>Ch.2 in *Design for Electrical and Computer Engineers* |
| 13 | 21 Nov | Write Section 2 in Project Report, Survey & Planning | No lecture: Reflection Paper (Section 2 outline for the Project Report) is due in BB Assignments |
| 14 | 28 Nov | Read Ch.3, 5 by Ford<br>Write Section 3 of P Report | SYSTEM DESIGN<br>Ch. 3, 5 *in Design for Electrical and Computer Engineers* |
| 15 | 5 Dec | Interim Technical Report is due in BB Assignments | STUDENT PRESENTATIONS OF INTERIM TECHNICAL REPORT (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
☒x (d) an ability to function on multi-disciplinary teams
❑ (e) an ability to identify, formulate, and solve engineering problems
☒x (f) an understanding of professional and ethical responsibility
☒x (g) an ability to communicate effectively
☒x (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
☒x (i) a recognition of the need for, and an ability to engage in life-long learning
☒x (j) a knowledge of contemporary issues
❑ (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice