

The University of Texas at Tyler  
Department of Electrical Engineering

**EENG 4115 Senior Design I (Required)**

**Syllabus**

**Catalog Description:**

The goal establishment, planning, and proposal phases of a capstone design project required of all seniors in Electrical Engineering. Includes the selection of a suitable project, an analysis of the design problem, the planning required to reach the desired goal, and the preparation of project preliminary design document defined in cooperation with representatives from industry when possible. Three hours of Design Studio Lab per week.

**Prerequisites:** ENGR 3314; EENG 4309 and 4109

**Credits:** ( 1 hours lecture, 0 hours laboratory per week )

**Text(s):** No text required. The text used in Design Methodology (ENGR 3314) in the previous semester is suggested.

**Additional Material:** None

**Course Coordinator:** David M. Beams

**Topics Covered:** (paragraph of topics separated by semicolons)

Project management; team-building; drafting and presentation of proposals.

**Evaluation Methods:** (only items in dark print apply):

1. Examinations / Quizzes
2. Homework
3. Report
4. Computer Programming
5. Project
6. Presentation
7. Course Participation
8. Peer Review

**Course Objectives<sup>1</sup>:** By the end of this course students will be able to:

1. Write target specifications and final design specifications. [5]
2. Develop a project plan. [5]
3. Plan, prepare, and deliver well-organized oral presentations as members of project teams. [6]
4. Produce, in conjunction with their project teams, professional-quality preliminary design document of their senior design projects. [3]
5. Evaluate alternative design solutions using multiple criteria (social, economic, and technical). [3,5]
6. Apply relevant codes, standards, and professional ethics in the analysis of engineering alternatives [3,5]
7. Produce a preliminary design of their projects [3,5];
8. Collect and analyze new technical information and acquire new knowledge as

necessary in the development of their design projects. [5,8]

*Numbers in brackets refer to method(s) used to evaluate the course objective.*

Relationship to Program Outcomes (only items in dark print apply)<sup>2</sup>: This course supports the following Electrical Engineering Program Outcomes, which state that our graduates will:

1. have the ability to apply knowledge of the fundamentals of mathematics, science, and engineering [5];
2. have the ability to use modern engineering tools and techniques in the practice of electrical engineering [1-4, 7];
3. have the ability to analyze electrical circuits, devices, and systems [5,7];
4. have the ability to design electrical circuits, devices, and systems to meet application requirements [5,7];
5. have the ability to design and conduct experiments, and analyze and interpret experimental results [5,7];
6. have the ability to identify, formulate, and solve problems in the practice of electrical engineering using appropriate theoretical and experimental methods [5-7]
7. have effective written, visual, and oral communication skills [3,4];
8. possess an educational background to understand the global context in which engineering is practiced, including:
  - a. knowledge of contemporary issues related to science and engineering [3,4,7];
  - b. the impact of engineering on society [3,4,7]
  - c. the role of ethics in the practice of engineering [3,4,7];
9. have the ability to contribute effectively as members of multi-disciplinary engineering teams [1-8];
10. have a recognition of the need for and ability to pursue continued learning throughout their professional careers [8].

<sup>2</sup>*Numbers in brackets refer to course objective(s) that address the Program Outcome.*

Contribution to Meeting Professional Component: (in semester hours)

Mathematics and Basic Sciences:		hours
Engineering Sciences and Design:	1	hours
General Education Component:		hours

Prepared By: David M. Beams

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Addendum: Statement from Criterion 4 of the 2007–2008 *Criteria for accrediting engineering programs* of the Accrediting Board for Engineering and Technology (ABET):

“Students must be prepared for engineering practice through the curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.”

The senior design sequence (EENG 4115 / 4315) is intended to provide that major design experience.