

The University of Texas at Tyler
Department of Electrical and Computer Engineering

EENG 4115 Senior Design I (Required)

Syllabus

Catalog Description:

Establishment of goals and 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 goals, the preparation of a project preliminary design document, and preparation and delivery of an oral presentation. Projects are defined in cooperation with representatives from industry when possible. Three hours of Design Studio Lab per week.

Prerequisites: EENG 4307, EENG 3308, EENG 4309, and EENG 4109

Pre or Co-requisites: SPCM 1315 or SPCM 1311

Credits: (0 hours lecture, 3 hours laboratory per week)

Text(s): No text required.

Additional Material: None

Course Coordinator(s): Mukul Shirvaikar, Yasser Mahgoub

Topics Covered: (paragraph of topics separated by semicolons)

Creativity and design methodologies, teambuilding, leadership, economic justification, codes and standards, project management, conflict resolution, enhanced communication techniques.

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 Learning Objectives:¹ By the end of this course students will be able to:

1. Write target specifications for a complex engineering project and produce a preliminary design including final specifications [3].
2. Evaluate alternative design solutions using multiple criteria including public health, safety, and welfare, global, cultural, social, environmental, and economic factors [3].
3. Produce a professional-quality preliminary design document and/or an oral presentation of the design project [3, 6].

4. Apply relevant professional ethics in the design process taking into account the impact of the design solutions in global, economic, environmental, and societal contexts [3].
5. Develop a project plan and deliver a solution by working as a project team with a written team contract [8].
6. Apply appropriate simulation methods to validate design choices, using modern engineering tools including modeling and simulation software and virtual instruments [3].
7. Collect and analyze new technical information and acquire knowledge as necessary in the design of the project [3].
8. Incorporate appropriate engineering standards and multiple constraints in the design process [3].
9. Utilize knowledge and skills acquired in earlier course work [3].

¹ Numbers in brackets [] indicate the method(s) of evaluation of achievement of Course Learning Objectives.

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

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics [1, 9].
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors [2, 8].
3. An ability to communicate effectively with a range of audiences [3].
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts [4].
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives [5]
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions [6].
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. [7].

²Numbers in brackets refer to Course Learning 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

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