

The University of Texas at Tyler
Department of Electrical 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 3307, EENG 3314, 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: James Vasil, Adjunct Lecturer

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

1. Form a working project team with a written team contract [8].
2. Write target specifications and final design specifications [3].
3. Develop a project plan [3].
4. Evaluate alternative design solutions using multiple criteria [3].
5. Apply relevant codes and standards in the design process [3].
6. Apply relevant professional ethics in the design process [3].
7. Apply appropriate simulation methods to validate design choices [3].
8. Describe the impact of the project technology on society [3].
9. Collect and analyze new technical information and acquire knowledge as necessary in the design of the project [3].
10. Produce a preliminary design of their projects [3].

11. Produce, in collaboration with other team members, a professional-quality preliminary design document of the design projects [3].
12. Use modern engineering tools including modeling and simulation software and virtual instruments [3].
13. Plan, prepare, and deliver well-organized oral presentations in collaboration with other members of the project team [6].
14. Document the design process in a laboratory notebook [3].

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

Relationship to Program Outcomes (only items in dark print apply)²: 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;
2. have the ability to use modern engineering tools and techniques in the practice of electrical engineering [12];
3. have the ability to analyze electrical circuits, devices, and systems;
4. have the ability to design electrical circuits, devices, and systems to meet application requirements [2,10];
5. have the ability to design and conduct experiments, and analyze and interpret experimental results [7];
6. have the ability to identify, formulate, and solve problems in the practice of electrical engineering using appropriate theoretical and experimental methods [3,4];
7. have effective written, visual, and oral communication skills [11,13,14];
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 [5];
 - b. the impact of engineering on society [8]
 - c. the role of ethics in the practice of engineering [6];
9. have the ability to contribute effectively as members of multi-disciplinary engineering teams [1];
10. have a recognition of the need for and ability to pursue continued learning throughout their professional careers [9].

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

<u>Prepared By:</u>	David M. Beams	<u>Date:</u>	8 Aug 2016
	Mukul Shirvaikar		22 August 2018
	James Vasil		9 November 2018

University Policies (Updated January 2018)

<https://www.uttyler.edu/academicaffairs/files/syllabuspolicy.pdf>

UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do. Students Rights and Responsibilities To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:

<http://www.uttyler.edu/wellness/rightsresponsibilities.php>

Campus Carry

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available

at <http://www.uttyler.edu/about/campus-carry/index.php>

UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

Grade Replacement/Forgiveness and Census Date Policies

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>.

Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a “W” grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid State-

Mandated Course Drop Policy

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.

Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities Revised 01/18

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services. Student Standards of Academic Conduct Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. "Cheating" includes, but is not limited to:

- copying from another student's test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;

- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.

iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by plagiarism software.

UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)

EENG 4115: Senior Design I

Fall 2018

Class meetings: Wednesday 2:00 – 4:45 pm

Location: Joint Meetings with MENG 4115: FAC 1009 at 3:00 PM
 Scheduled Class Meetings: RBN 2007
 Team Meetings: RBN 2007 or Other Designated Locations

Mtg.	Date	Topic	Deliverables / Activities
1	8/29	Introduction to course; Ideation team assignment; about design notebooks *	
—	9/04		Ideation team assignment due (by 12 noon)
2	9/05	Project list distributed; Bidding process** **	
—	9/07		Bids due
3	9/12	Team assignments; team contracts****	
—	9/17		Draft team contracts due
4	9/19	Review: Team Contracts ***	Each team will be scheduled for ≈15-minute meeting to discuss contracts with instructor
—	9/21		Final team contracts due Peer Evaluation #1 due
5	9/26	<< Team Meeting Time>> ****	
6	10/03	<< Team Meeting Time>> ****	
—	10/05		Preliminary (target) design specifications and project justification due Individual design notes due
7	10/10	Design Review 1: Preliminary design specifications and project justification ***	Each team will be scheduled for ≈30-minute meeting with instructor
—	10/12		Individual design notes 1 due Finalized preliminary (target) design specifications and project justification due
8	10/17	Mini Lecture: System-Level Design Concepts kickoff ****	
—	10/19		Finalized preliminary (target) design specifications and project justification due Peer Evaluation #2 due
9	10/24	<< Team Meeting Time>> ****	
10	10/31	<< Team Meeting Time>> ****	
—	11/02		System-level design concepts (draft) due Individual design notes #2 due
11	11/07	Design Review 2: System-level design concepts ***	Each team will be scheduled for ≈30-minute meeting with instructor.
—	11/09		System-level design concepts (final) due Peer Evaluation #3 due
12	11/14	Lecture: Feasibility Analysis, Concept Evaluation, Simulation and full PDD kickoff ****	
—	11/21	Thanksgiving Holiday – no class 11/21	

EENG 4115: Senior Design I

Mtg.	Date	Topic	Deliverables / Activities
13	11/28	<< Team Meeting Time>> ****	
—	11/30		Final design specifications Concept Selection (draft) due This includes feasibility analysis, ranking, and updated specifications. Subsystem simulation due Individual design notes due
14	12/05	Design Review 3: Final design specifications, simulation results, feasibility analysis ***	Each team will be scheduled for a 30-minute meeting with the instructor.
—	12/07		Concept Selection (final) due Documentation of parts that have been ordered or purchased due
Finals week	12/12	Course wrap-up (No meeting this week)	Final Primary Design Document ¹ due Design Notes #3 due Peer Evaluation #4 due Course evaluations

*Class one will be held electronically.

**Joint class will meet in FAC 1009 at 3:00 PM for < 1 hour, followed by team meeting time.

***Class will meet in RBN 2007 at 2:00 PM. At least 2 hours will be team meeting time.

**** No class meeting—entire class time is available for your team meetings.

All students ARE EXPECTED to utilize the full class meeting time (2:00 – 4:40 PM) every Wednesday. You must be available should we need to assemble the class on any Wednesday. DO NOT schedule work or other activities during this time.

Deliverables are due by 5 PM on the dates indicated unless otherwise noted.

TBD: Team Progress Reports (aka Design Reviews) are to be submitted through the University learning-management system as .docx or .doc documents *by 5 PM on the Monday preceding the Design Review*. To be accepted, reports *must use the memo template provided and follow the specified file-naming convention*. [Note: I need to think about this further and make clear what each team needs to do with their meeting minutes, etc. -James Vasil]

EENG 4115: Senior Design I

EENG 4115 Semester Grading

Team Grade Component	%	Individual Grade Component	%
Finalized Team Contract	5	Use of the Design notebook and weekly reports	15
Design Reviews and Finalized sub-documents	30 35	Ideation team assignment	5
Subsystem Simulation	40 5	Submission of peer evaluations	5
Primary Design Document ^{Note1}	25 30		
Parts Ordered	5 0		
MAXIMUM TEAM GRADE	75	MAXIMUM INDIVIDUAL GRADE	25

SEMESTER GRADE = TEAM GRADE x Peer Evaluation Factor^{Note2} + INDIVIDUAL GRADE

NOTES:

1. The final PDD includes each of the three finalized documents reviewed during the semester *and a project plan for Senior Design II* an executive summary.
2. Peer Evaluation Factor is the average peer evaluation received during the semester. Instructors reserve the right to modify the peer evaluation factor in extraordinary circumstances.