Engineering 10: Introduction to Engineering

Section 10.61, Fall 2015

Instructor:	Raji Lukkoor
Class Days/Time:	Mondays and Wednesdays: 6:30 PM – 10:15 PM
Location:	S48
Office Hours:	MW 6:00 PM – 6:30 PM, or by appointment
Email:	raji.lukkoor@gmail.com

Course Description

Introduction to Engineering is designed to allow students to explore engineering through hands-on design projects. Students will learn about the various aspects of the engineering profession and acquire *both* technical and non-technical skills, in areas such as project proposal, project management, technical communication, teamwork, and engineering ethics. Students will learn about human factors and engineering design factors impacting design as well as understand how sustainability principles influence design. Students will also gain a deep understanding of the challenges surrounding the world's energy needs.

Course Objectives

During this course, students would be exposed to so many ideas and principals. As a team of 2 to 3 students, solo projects are highly discouraged; they would work on a project that excites them and matters to them. Since a working project is not required, it gives them an endless opportunity to deeply understand and analyze different aspects of both technical and non-technical of their projects. Theory is one the important parts of the projects. The goal of the Projects would be either to proof or verify a theory by gathering supporting data via creating proper tests and/or charts, or to analyze why they were not able to achieve the expected outcome(s). Since it is highly recommended to create a diverse team, students would learn and have a good sense of the different engineering fields and how they overlap.
Students would understand the importance of team work and leadership. They would learn to understand the concept of project management by experiencing the importance of organizational skills and time management skills while keeping track of the budget. They would create PERT and Gantt chart. Constantly, they would be reminded to check for engineering ethics by discussing current engineering ethics news in the class.
Communication is highly encouraged during this course. Students would be able to have several mini-presentations and draft reports opportunities before submitting their final ones. As a class, students would do peer evaluations by providing constructive feedbacks.

Text

(Recommended but not required).

ENGINEERING YOUR FUTURE, A Comprehensive Introduction to Engineering By William C. Oakes, PhD 2009-2010 Edition
A Whole New Engineering, The Coming Revolution in Engineering Education by David R. Goldberg and Mark Somerville.

Attendance

Attendance is mandatory and roll will be taken. Ensure that vacations, doctor's appointments, social engagements, etc. do not interfere with attendance. Active class participation, including the completion of all class exercises, is key to achieving educational success. Class activities cannot be made up if the class is missed. If you are absent from class, the onus of checking on announcements made while you were absent is on YOU.

Classroom Protocol

Please arrive to class on time. If you do happen to arrive to class late, please enter and take your seat quietly. Expected classroom courtesies include: no text messaging, no emailing, no checking emails, or no gaming. Likewise, no recording of lecture, no in-class picture taking of lecture slides, no making/receiving phone calls. No copying or sharing of instructional material, including videos, PowerPoint slides, notes, handouts, problems, solutions, quizzes, tests, simulations, etc.

Note that any inappropriate or disruptive behaviors, including offensive/vulgar expressions, disrespecting others' viewpoints or disrespecting the instructor could lead to removal from the classroom and/or disciplinary action, as warranted.

Communication

Email communication is most appropriate for administrative matters (notification of illness, scheduling appointments, clarification of homework problems, etc.). With all communication, please maintain a high degree of respect and professionalism. Homework problems or other course materials are best discussed in person during scheduled office hours and not by email.

Coursework Expectation

Homework/Paper:

> Relevant homework/papers will be assigned throughout the quarter. Note that homework problems might be added or deleted from the list as the quarter progresses. If applicable, homework solutions will be posted on *Dropbox*.

In-class Participation:

> In-class participation consists of watching videos, participating in class discussions and asking content-related questions. The aim of these exercises is to help you develop your critical thinking skills. Note that exercises might be added or deleted from this list as the quarter progresses.

Final Written Report:

> A final written report per group is due for your project. Details regarding report expectations are given in the next section.
>
> Note: You must complete the Final Exam in order to complete the course.

Final PowerPoint Presentation:

A final PowerPoint presentation per group is due for your project. Details regarding presentation expectations are given in the next section.

Note: You must complete the Final Presentation in order to complete the course.

Evaluation & Grading:

Coursework will be weighted as follows:

Project Proposal	25%
PERT & Gantt Chart	20%
Miscellaneous HW/Paper	15%
Final PowerPoint Presentation*	20%
Final Written Report**	10%
Class Attendance & Participation	10%

Note: The above weighting is subject to change, with fair notice given in class.

The final course grades will be assigned according to the following grading scale, with standard decimal rounding (i.e. 0.5 and greater rounded up):

A+ = 100-98%	A = 97-93%	A- = 92-90%
B+ = 89-87%	B = 86-83%	B- = 82-80%
C+ = 79-77%	C = 76-73%	C- = 72-70%
D+ = 69-68%	D = 67-63%	D- = 62-60%
F = 59-0%		

The project proposal, report, HW, presentation and other materials must be submitted on time. No exception! All team members must be present and participate during the final presentation; otherwise you will receive a zero.

*The Final Presentation will be graded as follows:
20% Content
10% Format
30% Presentation (team and individual)
10% Theory
30% Verifications/Outcome

**The Final Report will be graded as follows:
10% Content
10% Format
10% Summary/Introduction/Abstract
15% Theory
20% Project management such as Pert, Gantt, budget, Part, task assignment, etc.
20% Test/Verification/Result/Setup- technique and interoperations

10% Conclusion
5% References/Appendixes

Please note that the instructor will create a master project folder on *Dropbox* during the first week of the class to create access to each team. Students are required to upload their work on this folder. Students are responsible the check the calendar folder on a regular basis to see if there is a change in the schedule. Please refer to the calendar folder for the Course Schedule.

Note: The above grading rubric is subject to change, with fair notice given in class.