Introduction to Engineering -10.01

De Anza College Winter 2020

Manizheh Zand

Class hours:
Mon, Tue, Wed, Thurs
9:30 am -10:45 am
11:00 am-1:15 pm
Rooms S48

Office hours:
Tu, Th: 11:20 am-11:40 am

Email:
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M.A. Rosenoff: "*Mr. Edison, please tell me what lab rules you want me to observe.*"

Thomas Edison: "*There ain't no rules around here. We're trying to accomplish something.*"

A whole New Engineer by David E. Goldberg and Mark Somerville

Course objectives
Introduction to Engineering is   designed to allow students to explore engineering through   hands-on design projects. Students learn about various   aspects of the engineering profession and acquire both technical skills and non-technical skills, in areas such as communication, teamwork, and engineering ethics. Students would learn about human factors as well as design factors within an overall process and including product life cycle stages.

By designing and implementing an actual engineering project, students will be exposed to many ideas and principals. Students will form teams of 2-3 and choose projects which excite them – and importantly, projects that have a good purpose. Successfully completing the project is not required; this provides the opportunity to deeply understand and analyze different technical and non-technical aspects of the project.

The theory is an important part of the projects. The actual goal of the projects is to prove or disprove a theory by gathering supporting data by creating proper tests and analyzing why or why not the expected outcome was achieved.

It is highly recommended to create a diverse team so students would get a good sense of the different engineering fields and how they overlap. Students will understand the importance of teamwork 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.

Throughout the course, students will be reminded to check for engineering ethics.

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 feedback.

 Course Requirement:
Begin this course with an open mind.

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

Grading Policy

The weights of the course work assignments are listed as below:

· **Project Proposal**	**5%**
· **Market survey**	**5%**
· **Pert & Gantt chart**	**5%**
· **Theory**	**5%**
· **Part status/order**	**5%**
· **Draft PPT**	**5%**
· **Draft Report**	**10%**
· **Final PPT**	**10%**
· **Final Report**	**10%**
· **Excel-HW**	**10%**
· **Written Assignments**[*]	**10%**
· **Quizzes**	**10%**
· **Class participation**	**10%**

*Written Assignments
1. Ted Talk
2. Mentor Interview
3. Ethics

And the overall course grade (letter-grade) will be assigned based on the distribution below:
·   100% to 86%:   Distributed for A+, A, and A-

·	85% to 71%:	Distributed for B+, B, and B-
·	70% to 56%:	Distributed for C+, C, and C-
·	55% to 41%:	Distributed for D+, D, and D-
·	40% and below:	F

Excel HWs and written assignments must be submitted on time otherwise up to 50% credit will be given

No Makeup quiz will be given

Project reports, PPTs, and the presentation must be on time. No exception!
All team members must be present and participate in the presentation; otherwise, they will lose up to 50% credit.

Please refer to the calendar for the days that each team must be present and work on their projects during class time.

Written Reports
20%   Peer review
10%   Summary/Introduction/Abstract
5%   Market Survey
10%   Theory
20%   Project management such as Pert, Gantt, budget, Parts, task assignment, …
20%   Test/Verification/Result/Setup- technique and interoperations
10%   Conclusion
5%   References/Appendixes

PPT
20%   Peer review
10%   Format
25%   Presentation (team and individual)
5%   Market Survey
10%   Theory
30%   Verifications/Outcome

Please note that the instructor will create a master project folder on Dropbox during the first week of class to create access for each team. Students are required to contentiously upload their work **to** this

folder. Students are responsible for checking the canvas assignments on a regular basis to see if there is a change in the schedule.

Course outline:

Week	Assignments/ Activities
1 Jan 6th	Introduction Gantt Chart- Lecture Pert Chart- Lecture Team Building- Lecture Excel Lecture
2 Jan 13th	Engineering Professions –Lecture Gantt Chart-Individual Due Mon Pert Chart –Individual Due Tue Excel HW1- Individual Due Tue Team Creation – Due Wed Arduino Workshop Excel Lecture Excel Quiz 1
3 Jan 20th	Written report, PPT Proposal, Survey Format- Lecture Group Gantt Chart-I and pert Chart-I – Due Tue Fusion 360 workshop (TBA) Arduino workshop Excel- lecture Excel-Quiz 2
4 Jan 27th	Proposal Report-Due Tue Arduino workshop Excel- lecture Excel Quiz 3
5 Feb 3rd	Theory- Lecture Simple Machines-Lecture Survey Questionnaire-Due Tuesday Group Gantt Chart-II and pert Chart-II – Due Thursday Purchasing Status Report-I- Due Tuesday Arduino workshop Excel Lecture Excel Quiz 4
6 Feb 10th	Ethics- Lecture Survey analysis –Due Thursday Theory –Due Thursday Mentor Interview – Due Thursday Excel Lecture Excel Quiz 4
7 Feb 17th	Project Presentation- Draft PPT and written report Proposal-Due Monday

8 **Feb 24th**	**Group Gantt Chart-III, Group pert Chart-III, and Group Purchase Report-II** **– Due Thursday** **Human Factor-Lecture** **Human Factor PPT & written Report-Due Wednesday** **Arduino Workshop** **<mark>Ethics Paper – Due Thursday</mark>**
9 **March 2nd**	**Product Life Cycle-Lecture** **Testing Strategy-Lecture** **Work on your project during the class** **Arduino Workshop** **<mark>Tedtalk paper– Due Thursday</mark>**
10 **March 9th**	**Work on your project during the class**
11 **March 16th**	**Project Presentation- Final PPT and written report –Due Monday**

Student Learning Outcome(s):

*The student will be able to analyze, graph and develop a formula for a given data set.

*The student will be able to prepare and write technical specifications and documentation, and be able to orally present them.

*The student will work collaboratively on an engineering team.