

Introduction to Engineering -10.02

De Anza College Summer 2020

Manizheh Zand

Class hours:

Mon, Tue, Wed, Thurs

9:30 am -10:45 am

LAB TBA

Lectures are held via Zoom

Office hours:

By appointments

Email:

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Course objectives

Introduction to Engineering is to explore engineering through Students learn about various

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.

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

designed to allow students hands-on design projects. aspects of the engineering

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.

Lab Kit

You need to purchase a compatible Arduino kit, [suggested kit](#).

Text

Recommended but not required

ENGINEERING YOUR FUTURE, A Comprehensive Introduction to Engineering by William C. Oakes, Ph.D.
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 below:

· Project	40%
○ Market survey	5%
○ Pert, Gantt chart, Part status/order	5%
○ Theory	5%
○ Draft PPT	5%
○ Draft Report	5%
○ Final PPT	5%
○ Final Report	5%
· Excel-HW	10%
· Written Assignments*	15%
· Quizzes	10%
· Class participation	10%
· Arduino Assignments	15%

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+ 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**

- 10% Gantt & Pert Chart**
- 20% 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 June 29th	Introduction Engineering Professions –Lecture Gantt Chart- Lecture and Individual assignment Pert Chart- Lecture and Individual assignment Team Building- Lecture Excel Lecture and Individual HW1 Excel Individual Quiz1 Intro to Arduino
2 July 5th	Proposal, Survery, Excel, PPT and Written report Lecture Proposal Report Gantt Chart-Group Assignment-1 Pert Chart –Group Assignment-1 Excel HW2- Individual Due Tue Team Creation – Arduino Workshop 1 & 2 Excel Lecture and Individual HW2 Excel Individual Quiz 2
3 July 12th	Theory, Excel, Mentor- Lecture Theory Report Survey report _questions only Survey analysis-report PPT Purchasing- Group Assignment- report 1 Group Gantt Chart-2 and pert Chart-2 – Due Tue Fusion 360 workshop (TBA) Mentor Interview Arduino workshop 3 & 4 Excel- lecture Individual HW3 Excel-Quiz 3
4 July 20th	Ethics, Excel Lecture PPT Draft 1 PPT Draft 1-Presentation

	<p>Written Draft 1 Ethics report Group Gantt 3 Group Pert 3</p> <p>Arduino workshop 5 & 6 Excel- lecture Individual HW4 Excel-Quiz 4</p>
<p>5 July 27th</p>	<p>TedTalk, Human Factor, life cycle Lectures Build and assemble week 5 Mon, Tue, Wed Human Factor PPT and written report Ted Talk Arduino Workshop 8</p>
<p>6 Aug 2nd</p>	<p>Final PPT and written report Presentation</p>

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.