



ENGINEERING

2016-2017 COURSE SYLLABUS

Welcome to Engineer Your World! Engineer Your World is a one-year high school project-based engineering curriculum developed by the Cockrell School of Engineering at University of Texas at Austin in collaboration with the National Science Foundation and NASA. Through socially relevant explorations and design challenges you will 1) learn engineering design skills, 2) develop engineering habits of mind, and 3) explore engineering fields and professions.

Course Outline

1. Introduction to Engineering
2. Designing for Customers - Flashlight (Exploration)
3. Discovering Design - Pinhole Camera (Design Challenge)
4. Understanding Data - Coffee (Exploration)
5. Designing with Data - Safer Buildings (Design Challenge)
6. Reverse Engineering - Flashlight (Design Challenge)
7. Programming - Electronic Music (Exploration)
8. Systems Engineering - Aerial Imaging (Design Challenge)

Explorations are shorter units (1-2 weeks) designed to introduce new skills.

Design challenges are longer units (4-7 weeks) through which you develop products and solutions as engineers.

Required Materials

1. Black or blue pen (not pencil)
 2. Empty 2-inch, 3-ring binder (you will be supplied with engineering paper)
 3. One clean sock (just one! A lonely laundry sock is perfect) to store your safety glasses
- Electronics may be used for academic purposes only.

Safety

Student safety overrides all other concerns. You will be using electrical components, heating elements, cutting tools, and possibly power tools to complete design challenges. There will be no tolerance for senseless play or miss-use of tools or materials. Be safe, not sorry.

Attendance

This class is team-project based. You need to be here and be on time. You need to contribute. If you know you'll be absent, plan ahead with your teammates and me. If you are absent, check in with your team the next day to see what you missed.

You are responsible for scheduling make-up design and build activities or any assessments that you miss. You have the same number of days to make work up as the number of days you were absent. Late work without an excused absence can be turned in before the end of the unit for a maximum grade of "C".

You are welcome to work on projects or unfinished assignments in room 407 if I am here.

Grading System

There are four components of your grade:



Engineering Journal (EJ) Entries
5 points each
We make entries just about every day, including notes, reflections, design ideas and sketches, activity and functional diagrams, and data tables.



Preliminary Project Documents
20-50 points each
As you design and build each project, you will produce a variety of planning documents. These will be EJ entries that are more formal checkpoints of your progress on a project.



Tests and Quizzes
0-50 points each
Although infrequent, these will give you and me an opportunity to gauge your progress toward internalizing the design process and the collaborative tools we use in engineering, along with any specialized vocabulary that we find is essential for discussing our projects. All tests and quizzes are open notes.



Finished Project Assessments
75-100 points each
Everyone on the team will get the same score for a) final design quality, b) team documentation and written reports, and c) team presentation. Real engineering teams are assessed on their final project not on who put in more effort. Be a reliable, positive, productive member of your team. (There will be new teams every project.)

All of these points are converted into a percentage grade (earned points / available points * 100), which is then converted into a letter grade.

A	93-100
A-	90-92
B+	87-89
B	83-86

B-	80-82
C+	77-79
C	73-76
C-	70-72

D+	67-69
D	60-66
F	<=59

Helping vs. Copying

During this school year, some of the best help you will get in engineering will come from your classmates. I applaud the cooperative spirit in which you help each other be successful in my class. You provide an invaluable service to each other! But you must never copy a classmate's work. When I give you an individual assignment (i.e. anytime you write something original in your journal or hand in a paper with just your name on it) then it must be your own original work. If a classmate does provide you with insights and explanations on homework and projects, you must still write all your own responses.

If you ever turn in a paper that is identical or nearly identical to a classmate's on open-ended assignments, you and the person with the identical work will both get zeros on the assignment. If someone ever copies your work without your permission, let me know immediately so the appropriate discipline can take place.

Advice

Have fun, get technical, and don't take yourself too seriously. You're going to have to accept things not working right the first time around. Failure lets you know what to fix and helps you learn a whole lot more!

Keep your engineer notebook neat, organized and up-to-date. Engineers rely on their notebooks.

Stay busy! There is always something to do.

Manage your time well and make quick decisions as team even if you don't agree. Get over it, continue to work together. Regroup after failure and promote encouragement and ideas, not blame and problems.

Finally, don't give up, and don't settle. You can always improve.

FAIL FAST. FAIL OFTEN.