



# ENGINEERING

## **COURSE SYLLABUS**

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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**

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1. Introduction to Engineering
2. Discovering Design - Pinhole Camera (Design Challenge)
3. Understanding Data - Coffee (Exploration)
4. Designing with Data - Safer Buildings (Design Challenge)
5. Designing for Customers - Flashlight (Exploration)
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**

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1. Five Star Spiral-bound Notebook - Graph Ruled, 100 sheets.
2. 1 pack of mini glue sticks for use in class projects.
3. 1 box of tissues or 1 roll of paper towels for class use.
4. You are encouraged to bring materials from outside of class for construction, with teacher approval.

### **Safety**

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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**

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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.

# Grading System

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There are four components of your grade:



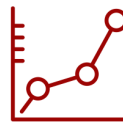
## Engineering Notebooks 5-10 points each

Engineering notebooks document your work as we go through the engineering design process and they are invaluable when writing project reports. Notebooks are working documents and are not intended to be perfect, but they must be legible and provide documentation of your design process.



## Quizzes 0-50 points each

Although infrequent, these will allow you and me to gauge your progress toward internalizing the design process and the collaborative tools we use in engineering.



## Preliminary Project Documents 10-50 points each

As you design and build each project, you will produce a variety of planning documents. These will be engineering notebook entries that are more formal checkpoints of your progress on a project.



## Finished Project Assessments 75-100 points each

Everyone on the team will get the same score for the quality of the final design product and team presentation. Be a reliable, positive, productive member of your team. (There will be new teams every project.) All final project reports will be individual submissions.

These points are converted into a percentage grade:  $(\text{Earned points} / \text{available points}) * 100$ .

## Late Work Policy

All assignments must be turned in on time. Meeting project deadlines is a non-negotiable in the engineering industry and one of the over-arching goals of this course is to instill engineering habits of mind. Meeting deadlines is also a vital skill you need as you move forward to college.

## Opportunities To Improve Your Grade

Students have the opportunity to raise their grade to a 70 on individual final reports if they receive a failing grade on the original assignment. Final team design products and team presentations are not eligible. Students can only recover credit if they turn in the original assignment on time. Students must incorporate all teacher feedback and/or complete any missing elements. The new report must be completed and submitted within one week from the time the original is returned to the student. All other grade issues will be handled on a case by case basis, so please come talk to me.

## Helping vs. Copying

During this school year, some of the best help you will get in this class 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! However you must never copy a classmate's work. All individual assignments must be your own original work. If you turn in an assignment or report that is identical or nearly identical to a classmate's, you and the person with the identical work will both get zeros on the assignment and I will submit an honor code violation.

## Advice

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Have fun, get technical, and don't take yourself too seriously. You're going to have to accept the fact that things will not work right the first time around. Failure is part of the process! Failure lets you know what to fix and helps you learn!

Stay busy, keep your engineer notebook neat, organized and up-to-date, manage your time well, regroup after failure, and finally - Don't give up and don't settle!

# **Trust The Process!**

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