

Course Overview

Engineer Your World is a one-year high school engineering curriculum developed by the Cockrell School of Engineering at University of Texas at Austin in collaboration with the National Science Foundation and NASA. This hands-on, project-based course emphasizes the historic achievements and contemporary challenges of engineers, the engineering design process, and the skills and habits of mind that engineers find most essential in their work. Our first unit focuses on establishing norms for all of our group interactions and for effective documentation of our projects in our engineering notebooks. The next six units all involve designing, building, and testing devices or systems of devices to accomplish specific tasks in response to customer needs. Each unit also emphasizes several specific aspects of the work of professional engineers. The remaining units are: 2. Pinhole Cameras (Discovering Design), 3. Piggy Flashlights (Reverse Engineering and Redesign), 4. Designing Coffee (Understanding Data), 5. Earthquake Simulator (Designing with Data), 6.) Programming Electronic Music (Microprocessors), and 7. Aerial Imaging (Systems).

Expectations for Learning

My Approach

All of our classroom activities revolve around designing and building the projects listed above. My role as teacher in this course is to guide you through the design process for each project by training you in a set of powerful collaborative design tools and by helping you evaluate the effectiveness of your designs so that you can redesign and improve them as we progress through each unit.

I tend to give frequent, small assignments, rather than large, long-term ones. This gives both of us regular feedback on your progress as you develop an understanding of key engineering concepts. Furthermore, if you miss one or two assignments, they won't sink your boat grade-wise. I design systems of instruction that have lots of forgiveness and second (third, fourth, etc.) chances to learn built in!

Grading Scale

The grading scale at STEM is different from the traditional high school model in two of key ways. First of all, there is no rounding of grades. This keeps things clean and simple and helps prevent the kind of "grade-grubbing" behavior on the part of students that drives teachers crazy. Second is the use of the "NC" grade. This grade allows students who are not at standard to relearn essential skills and content and to move forward with confidence, rather than earning sub-C grades and having gaps in their understanding. An NC does not impact your GPA in either a positive or negative way; think of it as a gift of time to improve learning.

A	100.0–90.0%	B+	89.9–87.0%	C+	79.9–77.0%	NC (No Credit)	≥69.9%
		B	86.9–83.0%	C	76.9–73.0%		
		B-	82.9–80.0%	C-	72.9–70.0%		

What Your Grade is Based On

<i>Engineering Notebook Entries</i>	We make entries just about every day. These include notes, reflections, design ideas and sketches, along with detailed instructions for building and operating devices. Engineering notebook entries are typically worth 5-15 points, with a 5% deduction for late work.
<i>Preliminary Project Documents</i>	As you design and build each project, you will produce a variety of planning documents, including mind-maps and C-sketches, data tables and graphs, and final, typed instructions for building and operating devices. I see these as more formal assessments of your progress on a project and these will be worth 20-50 points.
<i>Finished Project Assessments</i>	Each device that you build will be evaluated based on a rubric that we develop collaboratively, based on what you learned during the design and build process. Every project will have either a written or oral presentation of some sort. Finished Project Assessments typically run between 100 and 200 points, depending on the difficulty and level of detail in the presentation.

The Limitations of Skyward

Since I only grade your engineering notebooks once or twice during each unit, you will not be able to use Skyward to check up on daily homework completion. On the other hand, you can always check your assignment sheet and the graded assignments in your engineering notebook to make sure you are keeping up. You can also check all our engineering assignments on my Haiku site.

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 engineering notebook 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.

Late Work

You can check Haiku at any time to see if you are missing work in my class. 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. Except for excused absences, the deadline for other late assignments is the end of each unit. Late work without an excused absence can receive a maximum grade of "B".

Office Hours

Before and after school are great times to get individual help with something you do not understand in my class or to do make-up work! I am available every day from 7:00-7:30 AM and 2:30-3:45 PM on Tuesdays and Thursdays. Let me know ahead of time and I will be sure to be in my room.

Keeping Lines of Communication Open

Communication between parents and teachers can be instrumental in helping students be successful in all facets of school life. Please contact me anytime at aleslie@lwsd.org with questions or to schedule an appointment.