Welcome to Engineering 1! Engineering 1 is the first year of Engineer Your World, a 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. Discovering Design - Pinhole Camera (Design Challenge)
3. Understanding Data - Coffee (Exploration)
4. Designing with Data - Safer Buildings (Design Challenge)
5. Reverse Engineering - Flashlight (Design Challenge)
6. Programming - Electronic Music (Exploration)
7. 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.

**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!

**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 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. With the exception of excused absences, the deadline for late assignments is the end of each unit. Late work without an excused absence can receive a maximum grade of “C”.

You are welcome to complete missing assignments or work on your projects during office hours in 215.
Grading System

There are three main components of your grade:

- **Engineering Notebook Entries**
  3-5 points each
  
  We make entries just about every day, including notes, reflections, ideas, sketches, models, and data tables. Notebooks are working documents and don’t need to be perfect, but they must be legible and provide documentation of your design process.

- **Preliminary Project Documents**
  10-25 points each
  
  As you design and build each project, you will produce a variety of planning documents. These will be notebook entries that are more formal checkpoints of your progress on a project.

- **Finished Project Assessments**
  75-100 points each
  
  Each product that you build will be evaluated based on a rubric that we develop collaboratively to reflect what you learned during the process. Every project will have either a written or oral presentation of some sort.

Additional assignments or success skills may be grades on an as-needed basis. All of these points are converted into a percentage grade (earned points / available points * 100), which is converted into a letter grade. The grading scale at STEM is different from a traditional scale in two key ways. First, there is no rounding of grades. 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 your learning.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B+</th>
<th>C+</th>
<th>79.9–77.0%</th>
<th>99.0–90.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100.0–90.0%</td>
<td>89.9–87.0%</td>
<td>79.9–77.0%</td>
<td>99.0–90.0%</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>86.9–83.0%</td>
<td>76.9–73.0%</td>
<td>72.9–70.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>82.9–80.0%</td>
<td>76.9–73.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>76.9–73.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-</td>
<td>72.9–70.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>(No Credit)</td>
<td></td>
<td></td>
<td></td>
<td>≥69.9%</td>
</tr>
</tbody>
</table>

**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 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.

Extra Help and Communication

Office hours are held in room 215. Let me know ahead of time, and I will be sure to be in my room.

M, Tu, F 7:00-7:30 AM
W, Th 6:30-7:30 AM

I work part time, so I am not available in the afternoon.

E-mail me at mkong@lwsd.org.

Please contact me anytime at with questions or to schedule an appointment. I will respond within 48 hours.

All grade inquiries must be handled in person during office hours.

FAIL EARLY. FAIL OFTEN.