



Engineer Your World

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Jackson High School



Course Description: This course introduces students to engineering through a series of projects including creating a pinhole camera, designing an earthquake-proof tower, and building an aerial imaging device. Students often express their love for this course because it's project-based. That means there are no worksheets or tests. Each project lasts about a month and teaches a core engineering practice.

Course Outline:

FALL SEMESTER

- Unit 0: Introduction to Engineering
- Unit 1: 3D Modeling
- Unit 2: Designing Pinhole Cameras
- Unit 3: Creating Aerodynamic Cars
- Unit 4: Reverse Engineering
- Unit 5: Analyzing Wind Turbines

SPRING SEMESTER

- Unit 6: Electronic Circuitry
- Unit 7: Build Earthquake-Proof Buildings
- Unit 8: Programming Electronic Music
- Unit 9: Aerial Imaging project

***I'm in the process of converting these projects to virtual learning. Some will change.

Virtual Learning: This year requires innovation, and I'm happy with our district's response. School begins virtually and we'll reevaluate as the covid-19 crisis improves. For now, learning is virtual, but this is *real school*. Students are be graded A-F, there is attendance, etc.

Schedule:

"A" Day Monday, Wednesday		"B" Day Tuesday, Thursday		LIF Day Friday	
Teacher "office hours"	7:30 – 8:00	Teacher "office hours"	7:30 – 8:00	Teacher "office hours"	7:30 – 8:00
1st	8:00 – 9:45	4th	8:00 – 9:45	1st	8:00 – 8:30
Passing Time		Passing Time		Passing Time	
2nd	10:00 – 11:45	5th	10:00 – 11:45	2nd	8:40 – 9:10
Passing Time		Passing Time		Passing Time	
Lunch	12:00 – 12:30	Lunch	12:00 – 12:30	3rd	9:20 – 9:50
Passing Time		Passing Time		Passing Time	
3rd	12:45 – 2:35	6th	12:45 – 2:35	4th	10:00 – 10:30
Passing Time		Passing Time		Passing Time	
Teacher "office hours"	2:35 – 3:00	Teacher "office hours"	2:35 – 3:00	5th	10:40 – 11:10
Passing Time		Passing Time		Passing Time	
Passing Time		Passing Time		6th	11:20 – 11:50
Passing Time		Passing Time		Passing Time	
Passing Time		Passing Time		Lunch	12:00 – 12:30
Passing Time		Passing Time		Directed Independent Learning	12:30 – 1:20
Passing Time		Passing Time		LIF Time	1:20 – 2:35
Passing Time		Passing Time		Teacher "office hours"	2:35 – 3:00

Class Structure: Class meets three times weekly – 105 minutes on Monday/Wednesday or Tuesday/Thursday, depending on your class period, and 30 minutes each Friday. On days where we have class, students receive a morning announcement with the agenda. They access this via email or Canvas. Class begins and ends on Zoom, on time.

Class has two components: synchronous time and asynchronous time. Synchronous time (AKA Zoom time) typically comprises of a check-in, so I can see how student projects are doing. It'll also include class discussions and presentations. Asynchronous time (when we aren't on Zoom) is when students complete projects. During asynchronous time, I'm available via email or Canvas's Chat feature.

Most class work is comprised of projects. A project may last as long as 8 weeks and require several steps to create a final product. Our pinhole camera unit, for example, lasts about five weeks and requires students to build a pinhole camera with a cardboard box, take a photo of it working, and create a portfolio entry for that project. Students track their own performance with screenshots, photos, and notes. Then, they compile that information into a portfolio.

Picking Up Materials: Students must pick up microprocessors, circuit components, and building materials from Jackson High School on the second week of school, September 14th - 18th, between 3-6pm. Here's a schedule organized by last name.

10 th Grade Monday September 14		11 th Grade Tuesday September 15		12 th Grade Wednesday September 16	
3:00	A-H	3:00	A-H	3:00	A-H
4:00	I-P	4:00	I-P	4:00	I-P
5:00	Q-Z	5:00	Q-Z	5:00	Q-Z

If your time slot is inconvenient, you may go to a different time or on a different day. These are suggestions, not requirements. If you are a freshman, the plan is to have two make-up days on Thursday and Friday, the 17th and 18th. You can attend one of those days between 3-6pm. I'll email an update when I get more information. If you're unable to pick up materials, email me at gpoe@everettsd.org. Don't be afraid to ask for help! I'll get you the materials even if that means mailing them to you.

When you get to JHS, take the back entrance and follow the route below.



Zoom: Students join Zoom by clicking the button in Canvas. They are not permitted to invite other students to our Zoom meeting or attend a Zoom meeting for any class other than their own.

All students must remain muted unless speaking. They must also use a real name (nick names are allowed, but silly names aren't). Additionally, I request that students turn on their video during class unless they're doing something distracting. We'll average 40 minutes on Zoom each class period.

Canvas: This class implements Canvas as much as possible. Zoom, project descriptions, and peripheral software are all accessed via Canvas. The only additional software students need are email and gradebook.

Parents may view our Canvas, but they cannot interact with its assignments. I recommend that parents download "Canvas Parent" that students download "Canvas Student" on their phones. More information about accessing Canvas can be found [here](#).

Gradebook: Parents and students can access grades [here](#). I do not grade daily assignments, so it typically takes a month for the first weighted grade to populate the gradebook.

Communication: The best way to reach me is via email. Parents and students may email me to request a date and time to conference. Additionally, I send our daily agenda through Canvas's announcements feature and respond to Canvas's Chat feature during asynchronous time. Additionally, I periodically email newsletters to parents.

Office Hours: I'll have office hours 30 minutes before and after school each day. I'm also free by appointment if those times don't work. During that time, students and parents can email me to ask questions or initiate a Zoom meeting.

Meeting the Teacher: Our district has shortened the first three days of school for parent-teacher conferences. You can sign up for a time slot using [this sign-up sheet](#). We also have curriculum night on October 1st, where I'll present about the class and answer questions.

Attendance: To be marked "present," students must do *something* in a class's 24-hour period. That could mean attending a Zoom meeting, completing an assignment, sending an email, etc. Any interaction earns "present" for the day. Students that attend class each day, fully participate, and turn in assignments perform much better on assessments than students that merely complete assignments at their leisure. Click [here](#) to learn more about why attendance matters. Unless there's an emergency, I strongly suggest attending every zoom meeting. If you miss one, you must email me or complete a daily task or else there's no record of your participation and you'll be marked absent. Additionally, students that miss Zoom meetings can view and complete prior assignments through Canvas.

Late Work: At the end of the day, I grade portfolios, not daily tasks. If a student completes their project late, that's not going to affect their grade. I do not penalize for late assignments. However, it's wise to keep up with the class, because falling behind can leave students overwhelmed.

Grading: 100% of students' grades are determined by their portfolio. For each project, students must gather information, take photos, etc., and compile that for a portfolio entry. If we complete 10 projects, that means students should have 10 portfolio pages. I will conference with students periodically to make sure they're completing their portfolios correctly. All instructions are on Canvas.

Portfolio Scores follow this rubric:

Mastery	4	A	The portfolio includes all required information. The student proves that they've mastered the concepts. They've applied their knowledge to something new. Additionally, the entry is neat and professional.
Proficient	3	B	The portfolio includes all crucial information. The student proves that they understand the basic concepts intended for them, but they do not extend their knowledge.
Developing	2.2	C	The portfolio is missing some information. The student has some grasp of the concepts, but has some holes in their understanding.
Beginning	1.5	D	The portfolio is missing much information. The student has little grasp of the concepts.
No Evidence	0	F	The student either did not complete a portfolio entry, or there's no evidence that they understood any concepts