

PLTW - Principles of Engineering

Instructor: Mr. Mark Welker

Office Hours: Thursday: 2:40 - 4:00, All Additional By Appointment

Course Description:

Principles of Engineering (POE) is a foundation course of the high school engineering pathway. This survey course exposes students to some of the major concepts that they will encounter in a postsecondary engineering course of study. Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of materials and structures, automation, and kinematics. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

Students have the opportunity to develop skills and understanding of course concepts through activity-, project-, and problem-based (APB) learning. By solving rigorous and relevant design problems using engineering and science concepts within a collaborative learning environment, APB learning challenges students to continually hone their interpersonal skills, creative abilities, and problem solving skills. Students will also learn how to document their work and communicate their solutions to their peers and members of the professional community. It also allows students to develop strategies to enable and direct their own learning, which is the ultimate goal of education.

Course Outline:

Unit 1: Energy & Power

- Lesson 1.1: Mechanisms
- Lesson 1.2: Energy Sources
- Lesson 1.3: Energy Applications
- Lesson 1.4: Design Problem: Renewable Electrical Energy

Unit 2: Materials & Statics

- Lesson 2.1: Statics
- Lesson 2.2: Material Properties
- Lesson 2.3: Material Testing
- Lesson 2.4: Design Problem: Bridge Simulated Structural Design

Unit 3: Control Systems

- Lesson 3.1: Machine Control
- Lesson 3.2: Fluid Power
- Lesson 3.3: Design Problem: Materials Sorter

Unit 4: Statistics & Kinematics

- Lesson 4.1: Statistics
- Lesson 4.2: Kinematics

Communication Methods:

Course Website	Remind 101	Email
http://welkersclass.weebly.com	text @poef17 to 81010	mwelker@wcpss.net

While most of the lesson material is on PLTW's learning management system, my website is available to both students and parents, and includes lesson plans, updated notes on the material covered and the expectations of each week, and other supplemental material for the students.

Professional Skills:

Time Management - Students need to apply themselves on a daily basis.

Personal Motivation - Actively seeking and taking part in any undertaking relating to the chosen skill area.

Problem-Solving Ability - This course encourages and teaches students to problem solve and use critical thinking to solve problems.

Reliability/Dependability - Demonstration by the student that he/she can be relied upon to do what is expected in class and in group work. This includes

Ability to Work with Others - A variety of skills including teamwork are addressed. In this course students must work in groups on various tasks and projects for solving problems, generating ideas, stimulating critical thinking, etc. by unrestrained spontaneous participation in discussion. Students will acquire strong teamwork and communication skills throughout this course.

Cell Phone and Electronic Device Policy:

Cell phones and other electronic devices such as tablets can be of great use in the classroom setting. Students will be allowed to use such devices during designated times. Our classroom policy includes indications for student electronic device usage as follows: Red light (no devices), Yellow Light (ask permission to use your device), Green Light (Get your Devices Out and keep them visible on your desk). When devices need to be down, the instructor will request "Park your device", meaning devices should be face down on the corner of the desk.

When devices are not to be used and a student refuses to put the device away, the following procedures will occur:

Request device be put away.

Request device to sit on instructor desk for the remainder of the period.

Contact Parent & Student Referral

Grading:

Quarter 1 (40%)	Quarter 2 (40%)	Grading Scale
Engineering Notebook	25% Engineering Notebook	25% A: 90 - 100
Unit Exams	20% Unit Exams	20% B: 80 - 89
Projects / Online Portfolio	35% Projects / Online Portfolio	35% C: 70 - 79
Quizzes	10% Quizzes	10% D: 60 - 69
Midterm	10% POE Final Project	10% Below 60, Needs Resubmission
	FINAL EXAM (20%)	

Absences

Attendance is taken daily. If you are absent it is YOUR responsibility to make up any work missed. I will have an absentee folder, which will have copies of all assignments in it. Absences of 3 days or less the student will have 1 day for each day of an absence to make up work missed. Absences of more than 3 days the student will have 2 days for each day absent. Assignments (including tests) made prior to a student's absence that are due during the absence or on the day of return need to be submitted to the teacher immediately upon the student's return to school.

Tardies

It is expected that students arrive to class on time every day. If a student is late coming into class, they will be required to sign the tardy sheet upon entering and are expected to join the class quietly.

- 1st Offense – Verbal Warning
- 2nd Offense-Verbal Warning
- 3rd Offense- Phone call & lunch detention assigned

Retake & Make Up Policies:

Missing Work Due to Absence: must be turned in within 2 days of their return to receive full credit

Late Assignments: 10pts per day for assignments turned in late. Missing assignments will be accepted up to one week after interims are distributed.

Quiz & Exam Retakes:

- Write down each of the questions that were incorrect.
- Use the classroom resources to find and write down the correct answers in their notebook.
- Have parent sign the corrections
- Schedule retake with teacher (this will be during acceleration or after school –see office hours)

Course Materials:

1/4" Graph Paper Notebook	2GB+ Flashdrive	Pen & Pencil
Headphones	Donated Supplies:	

Any/All supplies that you may wish to donate are welcome. Most commonly used/needed supplies include, but are not limited to, the following: Masking tape, Rubber Bands, Cardstock, String, Pencils, Pens, Hot Glue Guns, Scissors, Tissue, Hand Sanatizer, Paper Towels, , etc.

Please Complete and Return

I have read and understand fully the information laid out in the syllabus document for my course. I will take all opportunities granted to me in order to complete my best work throughout the semester.

Student Name (Print Clearly)	Student Signature	Date
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Parent / Guardian Name (Print Clearly)	Parent / Guardian Signature	Date
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Parent(s) / Guardian(s) Phone & Email (Print Clearly)