

Principles of Engineering

# COURSE SYLLABUS

INSTRUCTOR: Mr. Baker

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CLASS LOCATION: Room 118

OFFICE HOURS: 8:30 - 5:00 Mon. & Wed., 8:30 – 4:00 Fri.

OFFICE PHONE: 753-7377 Ext. 4300      HOME PHONE: 563-6689

E-MAIL ADDRESS: [jbaker@intechchs.org](mailto:jbaker@intechchs.org)

COURSE WEB PAGE: <http://www.intechengineering.org>

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## A. COURSE DESCRIPTION

Principles Of Engineering (POE) is a high school-level survey course of engineering. The course exposes students to some of the major concepts that they will encounter in a postsecondary engineering course of study. Students have an opportunity to investigate engineering and high tech career POE gives students the opportunity to develop skills and understanding of course concepts through activity-, project-, and problem-based (APPB) learning. Used in combination with a teaming approach, APPB learning challenges students to continually hone their interpersonal skills, creative abilities, and problem solving skills based upon engineering concepts. It also allows students to develop strategies to enable and direct their own learning, which is the ultimate goal of education.

To be successful in POE, students should be concurrently enrolled in college preparatory mathematics and science. Students will employ engineering and scientific concepts in the solution of engineering design problems. Students will develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges. Students will also learn how to document their work and communicate their solutions to their peers and members of the professional community.

Principles Of Engineering is the second of three foundation courses in the Project Lead The Way high school engineering program. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

## B. METHOD OF INSTRUCTION

This is a lecture-lab course in which topics are presented by the instructor. Projects are explained and assigned, and are to be completed during lab periods and outside of class as needed. Students are required to maintain an Engineer's Notebook and Portfolio throughout the course with periodic checks. There is a comprehensive final exam given at the end of the school year in May.

## C. COURSE TOPICS/UNITS

- **Unit 1 Energy and Power - Time Days: 49 days**
  - Lesson 1.1 Mechanisms (15 days):
  - Lesson 1.2 Energy Sources (11 days):
  - Lesson 1.3 Energy Applications (10 days):
  - Lesson 1.4 Design Problem – Energy and Power (13 days):
- **Unit 2 Materials and Structures - Time Days: 40 days**
  - Lesson 2.1 Statics (14 Days):
  - Lesson 2.2 Material Properties (11 Days):
  - Lesson 2.3 Material Testing (10 Days):
  - Lesson 2.4 Design Problem – Materials and Structures (5 Days):
- **Unit3 Control Systems - Time Days: 46 days**
  - Lesson 3.1 Machine Control (16 days):
  - Lesson 3.2 Fluid Power (15 days):
  - Lesson 3.3 Design Problem – Control Systems (15 days):
- **Unit 4 Statistics and Kinematics - Time: 30 Days**
  - Lesson 4.1 Statistics (5 Days):
  - Lesson 4.2 Kinematics (10 Days):

## D. REQUIRED SUPPLIES

- One (1) 1 1/2 Three Ring Binder for handouts and portfolio if you don't have one from a previous PLTW course.
- Blue or Black regular ball point pens (No felt-tip or gel pens)
- 3" X 5" note cards for test notes

## E. GRADING PLAN

- Homework = 20%
- Engineer's Notebook = 15%
- Projects = 35%
- Tests = 30%

The grading scheme will be as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
93%	90%	87%	83%	80%	77%	73%	70%	67%	63%	<63%

## F. COURSE SPECIFICS

- For all papers to be written, the following formatting standards apply:
  - 12 point Arial or Times New Roman font only. Arial is preferred.
  - Double space only. No other spacing will be accepted.
  - ALL margins are to be 1" (one inch) only.
  - Students should use a 3" x 5" single sided, handwritten note card for all tests.
  - Students should use an 8.5" x 11" sheet of notes (handwritten, single-sided) for use on the final exam. (Notes will be turned in with the test.) If a student misses a test because of an exempt or excused absence, the test may be made up the next day.

## G. CLASSROOM RULES OF CONDUCT

- SAFETY -- Students will **ALWAYS** follow all safety rules. Violation of any safety rule will result in a three page safety report to be submitted and presented to the class.
- RESPECT -- Students will respect one another, themselves, the teacher, and the equipment by their actions, words and expressions.
- HONOR -- Students will honor other people's ideas and feelings. Students will honor the rules of the school.

## H. ATTENDANCE POLICY

- LATE – Students not in their seat at the time of the late bell will be considered tardy which will be recorded in the school records.
- ABSENT – Students who have an unexcused absence will have any assignments, tests, or labs considered late under the assignment policy. Excused absences have two (2) class days to make up missing work.

## I. RESOURCES INFORMATION

- All assignments, hand-outs and presentations are available on my school website including a copy of this syllabus.
- Course webpages are password protected. Students will receive login information on the first day of class.

## J. AFFIDAVIT

- See following page.

## **Principles of Engineering Syllabus Affidavit**

My signature below indicates that I have read and understand this syllabus and have been given instructions on where to locate additional copies online.

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Student Printed Name

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Student Signature

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Parent Printed Name

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Parent Signature

**Please sign and return to the instructor.**