**Project Lead the Way: Principles of Engineering (Engr Science)**

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Room Location: 554.1 Conference Period: 2nd Period

Engineers make a world of difference!

Through problems that are engaging and challenging, students explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation.

Principles of Engineering (POE) is a foundation course of the high school PLTW engineering pathway. This survey course exposes students to some of the major concepts that they will encounter in a post-secondary 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.

*Supplies*

* *Composition Book Quad Rule (graphing paper)*
* *Scotch Tape Rolls 6 pack*
* *Pencil*

Participation:

ALL students are required to participate in class throughout related activities, assignments, or projects. Participation is imperative for this type of curriculum and prepares the student on how to exemplify interpersonal skills, teamwork skills, leadership skills, and proactive skills which are needed in order to perform professionally within industrial environments.

Student Expectations:

* Students must be on time to class every day.
* Students must come to class prepared with all materials needed each day to complete all assignments/ materials learned in class.
* Students will be expected to participate in all activities involved with the class.
* Any student who is absent from class is responsible for getting material from another student in the class and be prepared when returning to class.
* Each student is responsible for their own belongings and materials.
* Follow all rules and regulations of AHS
* NOTE: If a student is absent from an approved extracurricular activity, then the student is responsible for turning in the assigned work at the beginning the next class. If the student has an unexcused absence, then the work will not be accepted until the absence has been changed to an excused absence. If the absence is not changed within the appropriate time, as stated in the student handbook, then the student will receive a zero(s) for any and all work that was due during the time of his/her absence.

Requirements:

* All students must be on time. Tardiness is not acceptable
* All students must come to class prepared with the following materials: Engineering Notebook and Pencil (Additional materials will be announced before the next class when they are needed.)
* Students will be required to keep up with an interactive notebook for their assignments.

Grading Policy:

\*Each nine weeks, is worth 40%. The final exam is worth 20% at the end of the semester.

* Major 50%
* Daily: 50%

Daily grades

- This year, we will be flipping the classroom. When we are learning a new math concept, students will be expected to take notes at home watching videos on Schoology, and come to class prepared to complete the activity. This will be to maximize time to ask questions and work together, rather than working on unfinished work alone, at home. If the math activities do not require learning new math concepts, video lessons will not normally precede them the night before. Non-math lessons will be taught, in class in a more traditional setting.

- Hands on lab activities will also occur in this class. These will usually be daily grades, but will more heavily weighted, depending on how many class days it takes us to complete these activities

- Daily warm-ups will be graded at the end of every week. These will be worth one-quarter that of normal daily grades.

Major Grades:

- There will be written, hands on, and visual tests (or projects) given. Written exams will consist of facts, problems and vocabulary given prior to the test date. Visuals, and hands on projects will be assigned throughout the semester with given due dates.

- Notebook Checks: Students will be required to actively keep their Engineering Notebook up to date. Expect a notebook check every 2-3 weeks to ensure proper notebook keeping; therefore, please make sure your notebook is current with the material/data introduced in class.

- Retakes: will be allowed for written test only. Students have one week (5 school days) from the date the scored test was returned to make up the test.

**POE Unit Summary**

**1st 9 weeks**

 Unit 1….Energy and Power

 OSHA Certification

**2nd 9 weeks**

 Unit 1…Energy and Power

 Unit 4…Statistics and Kinematics

\*Subject to change\*

**3rd 9 week**

 Unit 2…Materials and Structures

**4th 9 weeks**

 Unit 3……Control Systems

 **End of Course Exam**