Principles of Engineering

Mrs. Carlson – D102
Pathway to Engineering
Project Lead the Way
CTE Academy
Sioux Falls, SD
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POE Course Description

Principles of Engineering (POE) is a high school-level survey course of engineering. The course will expose you to some of the major concepts that you will encounter in a postsecondary engineering course of study. You will have an opportunity to investigate engineering and high tech careers.

You will employ engineering and scientific concepts in the solution of engineering design problems. You will develop problem-solving skills and apply your knowledge of research and design to create solutions to various challenges. You will also learn how to document your work and communicate solutions to peers and members of the professional community.

The course of study includes:

- Mechanisms
- Energy Sources
- Energy Applications
- Machine Control
- Fluid Power
- Statics
- Material Properties
- Material Testing
- Statistics
- Kinematics

POE Course Outline

Unit 1: Energy and Power
- Lesson 1.1 Mechanisms
- Lesson 1.2 Energy Sources
- Lesson 1.3 Energy Applications
- Lesson 1.4 Design Problem – Energy and Power

Unit 2: Materials and Structures
- Lesson 2.1 Statics
- Lesson 2.2 Material Properties
- Lesson 2.3 Material Testing
- Lesson 2.4 Design Problem – Materials and Structures

Unit 3: Control Systems
- Lesson 3.1 Machine Control
- Lesson 3.2 Fluid Power
- Lesson 3.3 Design Problem – Control Systems

Unit 4: Statistics and Kinematics
- Lesson 4.1 Statistics
- Lesson 4.2 Kinematics

POE Expectations

Project Lead the Way's Pathway to Engineering program is a pre-professional program. Participants in this program will be held to the highest academic and behavior standards.

Academic expectations include:

- Preparing for class and having all required materials on hand
- Completing activities and meeting project deadlines
- Working cooperatively with others

Behavior expectations include:

- Being punctual for all class meeting times
- Maintaining a clean and **SAFE** working environment
- Speaking respectfully to others
- Using all equipment **SAFELY** and for its intended purpose only

Deadlines and Late Work:

- Meeting project due dates will be critical to your success in this course and as a professional
- Communication is crucial if you are struggling to meet deadlines
- Absolutely no extensions will be given unless communicating with your instructor BEFORE the due dates

Professionalism Grade:

- Responsible use of equipment/lab time/classroom time
- Maintaining a respectful and positive attitude w/ students and teachers
- Contributing to class discussions, activities, projects beyond a bare minimum level

Regular attendance will be critical for your success in the Pathway to Engineering program. In case of absence, course participants must contact the instructor at Christine.carlson@k12.sd.us to receive make-up work. Please do not expect to use class time to discuss or complete missed work.

Note: Participants with unexcused absences may not be given the opportunity to make up group activities and/or group projects.