

# Principles of Engineering Design - POE

May River High School



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**Room:** 601 - PLTW in CATE Building

## ***PROJECT LEAD THE WAY***

*Project lead the way* is a series of courses which introduce students to the scope, rigor, and discipline of engineering and engineering technology prior to entering college. Introduction at this level will attract more students to engineering, and will allow students, while still in high school, to determine if engineering is the career they desire. Students participating in PLTW courses are better prepared for college engineering programs and are more likely to be successful, thus reducing the attrition rate in these college programs, which currently exceeds 50% nationally. For more information about the program please go to [www.PLTW.org](http://www.PLTW.org)

### **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 one of the 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.

The course of study includes:

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

### **Required Supplies:**

- Engineering Notebook (Composition Graph Notebook)
- Mechanical Pencils (0.5 and 0.7)
- Flash Drive (at least 4GB)
- Plenty of graph paper

## Computer Hardware/Software use

- The computers are the property of the school district and are intended for student instruction, not personal use.
- Students will be assigned a computer and be responsible for its use during the class period.
- Treat computers with care and respect. They are for **your** use.
- Report any problems to teacher if/when they arise.
- Do not shut down a computer unless instructed by teacher to do so.
- Do not misuse computer hardware and software such as sending out unauthorized messages, vandalizing equipment, altering a software program, playing games, plagiarism, etc.
- Do not download **anything** to a school computer (games, programs, etc.).
- Use the Internet for appropriate school related activity.
- Do not change desktop screen.

## Classroom Expectations:

- Students are to be in class before the tardy bell rings.
- Students are to be prepared each day with the necessary materials.
- Students are to be attentive, involved and organized in class.
- Drawing assignments and notes MUST be done in pencil (0.5).
- Do not converse without permission.
- Treat everyone with consideration and respect. Disruptive behavior will not be tolerated.
- Students will not leave the class without teacher permission.
- Safety rules are to be followed at all times.
- **No food or drink during class.**

Students are to follow ALL school rules as outlined in the student handbook in your agenda books.

**Tardy Policy:** Students must be **IN** the classroom before the tardy bell rings. Only an administrator or I may excuse you from class, **NO EXCEPTIONS!**

## **Discipline Policy:**

Disciplinary rules are outlined in the student handbook. Students will be verbally warned the first time that a rule is broken. The parent(s) will be called if the behavior persists. A referral will be written as a last resort or for any major infraction.

## **Grading:**

Your assignments will be given a point total and your quarter grade will be based on the total number of points you achieve on tests, quizzes, and daily work.

## **Final Grade:**

Your final grade will be calculated as follows:

1 <sup>st</sup> 9 Weeks:	Formative Assessment 40%	Summative Assessment 60%
2 <sup>nd</sup> 9 Weeks:	Formative Assessment 40%	Summative Assessment 60%
Course Grade:	1 <sup>st</sup> 9 Weeks 50%	2 <sup>nd</sup> 9 Weeks 50%

May River High School / Career and Technology

Weekly Formative Evaluation Rubric

<b>Time Management</b> Professional skills in reliability, scheduling, time management to optimize project, client, employer, desired outcomes  POINTS _____ out of 15	<b>Professional</b> 10-15 pts  <b>PROFESSIONAL</b> Attends class and activities on time. Utilizes course time for course work. Meets all deadlines while exceeding the standards for professional presentation. Utilizes time management processes for self and team projects.	<b>Acceptable</b> 5-9 pts  <b>ACCEPTABLE</b> Misses class at times. Contacts instructor when missing class and attempts to get assignments. Makes arrangements for being absent. Meets all deadlines. Wastes class time occasionally.	<b>Unacceptable</b> 0-4 pts  <b>UNACCEPTABLE</b> Misses class or parts of class frequently. Does not call or attempt to get assignments when class is missed. Misses deadlines due to missing class or wastes time. Sub standard work due to little effort.	Notes:
<b>Work Environment</b> Creating and maintaining a professional work environment for all individuals' safety  POINTS _____ out of 15	<b>Professional</b> 10-15 pts  <b>PROFESSIONAL</b> Maintains work environment by abiding with safety rules. Properly cleans and picks up work areas after each use. Recognizes that shared work space requires extending coworker respect to the shared spaces by maintaining a clean overall work environment for safety.	<b>Acceptable</b> 5-9 pts  <b>ACCEPTABLE</b> Maintains work environment by abiding with safety rules. Usually participates in work environment upkeep. Cleans and picks up work area most of the time. Regards work environment with respect.	<b>Unacceptable</b> 0-4 pts  <b>UNACCEPTABLE</b> Does not maintain work environment. Does little to any cleaning and picking up after each use. Leaves trash, food containers for others to pick up. Little regard for work environment.	Notes:
<b>Equipment</b> Profession practice in care, use, and storage of equipment.  POINTS _____ out of 15	<b>Professional</b> 10-15 pts  <b>PROFESSIONAL</b> Understands and utilizes proper procedures for use, care, storage of equipment for each use. Follows check in process on time, stores equipment correctly. Handles equipment with respect for safety and care.	<b>Acceptable</b> 5-9 pts  <b>ACCEPTABLE</b> Understands and utilizes proper procedures for use, care, storage of equipment. Follows check in process. Stores equipment correctly. Handles equipment correctly. Handles equipment with respect for safety and care.	<b>Unacceptable</b> 0-4 pts  <b>UNACCEPTABLE</b> Lacks proper procedures for use, care, storage of equipment on multiple instances. Skips check in process frequently. Leaves equipment out. Expects others to care for equipment for them.	Notes: <input type="text"/>
<b>Class Participation</b> Positive and frequent participation in class activities.  POINTS _____ out of 15	<b>Professional</b> 10-15 pts  <b>Professional</b> Student contributes to all class team projects, discussions, gives meaningful feedback, stays on task, keeps attention on course activities.	<b>Acceptable</b> 5-9 pts  <b>Acceptable</b> Student contributes to most class team projects, discussion, gives meaningful feedback, stays on task, pays attention in class.	<b>Unacceptable</b> 0-4 pts  <b>Unacceptable</b> Student does not contribute to team projects, class discussions. Sleeps in class or focuses on activities unrelated to class, takes excessive breaks.	
<b>Professionalism</b> Professional courtesy and respect for individuals in language and actions. Dresses properly according to the work environment and task.  POINTS _____ out of 15	<b>Professional</b> 10-15 pts  <b>Professional</b> Student is polite and respectful to others, does not interrupt when others are speaking, uses appropriate language. Is always prepared for whatever the course activities may be. Properly dressed.	<b>Acceptable</b> 5-9 pts  <b>Acceptable</b> Listens while others are talking, attends to class activities, uses appropriate language. Prepared for most of class. Dresses properly according to the work environment and task.	<b>Unacceptable</b> 0-4 pts  <b>Unacceptable</b> Student is distracting to others, ignores and is disrespectful of others. Uses inappropriate language and/ or behaviors such as: harassment, ridicule, racism/sexism. Does not dress properly according to the work environment and task.	Notes:
<b>Daily Work &amp; Homework</b> (list assignments here and notes in appropriate boxes to the right)  POINTS _____ out of 10	<b>Mastery</b> 8-10 pts	<b>Proficient</b> 4-7 pts	<b>Little/no Evidence</b> 0-3 pts	Notes:
<b>Quizzes &amp; Project Process</b> (list assignments here and notes in appropriate boxes to the right)  POINTS _____ out of 15	<b>Mastery</b> 10-15 pts	<b>Proficient</b> 5-9 pts	<b>Little/no Evidence</b> 0-4 pts	Notes:

GRADE TOTAL POINTS: \_\_\_\_\_ % WEEK OF \_\_\_\_\_

STUDENT: \_\_\_\_\_ TEACHER: \_\_\_\_\_

**May River CATE Grading Policy and Procedures:**

**Summative Assessments (60% of total grade per 9 weeks):**

*(This policy may be subject to changes after an evaluation period)*

*Minimum of 4 per 9 weeks (If less than 6 summative assessments are given there must be an approved retake policy in place)*

*Maximum of 9 per 9 weeks*

These assessments are designed to evaluate mastery of skill and knowledge through a major section of the course. They may include major test and projects.

**Formative Assessments (40% of total grade per 9 weeks):**

*8-9 per 9 weeks (Dates will be predetermined and sent out at the beginning of the semester, subject to change if schedule is adjusted.)*

The Formative Evaluation Rubric above will be used as an evaluation tool and form of feedback to students, parents, and administration every 5 days and will be the only grade shown in the formative assessment category of the gradebook. These dates will be posted in the gradebook at the beginning of the semester so students and parents can keep up with their progress toward our learning objectives. The Rubric and Feedback will be returned in a timely manner and will document the feedback that was given throughout the evaluation period. Students will also receive feedback in many formats throughout the day and week. As much of this as possible will be communicated formally on this rubric within approximately 2 days of the due date shown in PowerSchool.

These assessments are designed to evaluate and give feedback on skills and knowledge throughout a course. It is setup to evaluate the skills required to gain and hold employment in the courses field of study. There are two sections of this rubric but all sections add up to a 100% total. The first section evaluates work and job skills and the second section evaluates students skill and ability on individual task (daily/homework and quizzes). These are very closely connected. For example, if a student refuses to do an assignment, other means may be used to evaluate the student's knowledge but it may have more effect on the participation, time management, and professionalism scores. This will be documented in the notes section when returned as well.

**See dates below for tentative Formative Assessment due dates:**

<b>1st 9 Weeks</b> (End date October 18) 8 Total	<b>2nd 9 Weeks</b> (End date December 20) 8 Total	<b>3rd 9 Weeks</b> (End date March 16) 9 Total	<b>4th 9 Weeks</b> (End date May 31) 9 Total
8-25-2017	10-20-2017	1-12-2017	3-16-2017
9-1-2017	10-27-2017	1-19-2017	3-23-2017
9-8-2017	11-3-2017	1-26-2017	3-29-2017
9-15-2017	11-10-2017	2-2-2017	4-6-2017
9-22-2017	11-17-2017	2-9-2017	4-20-2017
9-29-2017	12-1-2017	2-16-2017	4-27-2017
10-6-2017	12-8-2017	2-23-2017	5-4-2017
10-13-2017	12-15-2017	3-2-2017	5-11-2017
		3-9-2017	5-18-2017