

# Providence Career & Technical Academy

## Pre-Engineering I Technology Syllabus

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### **Course Description:**

Introduction to Engineering Design (IED) is a high school engineering course in the PLTW Engineering Program. In IED, students explore engineering tools and apply a common approach to the solution of engineering problems, an engineering design process. Utilizing the activity-project-problem-based (APB) teaching and learning pedagogy, students progress from completing structured activities to solving open-ended projects and problems that require them to plan, document, communicate, and develop other professional skills.

**Pre-Engineering I:** 10<sup>th</sup> grade students will be participating in the Project Lead the Way Introduction to Engineering Design (IED) curriculum this school year.

### **Required Textbooks, Reading and Supplementary Materials:**

All materials are available through the PLTW.org website

### **Common Core Standards Addressed:**

For a full list of standards, please visit the site below.

<https://www.pltw.org/our-programs/standards-alignment>

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### Common Core State Standards for English Language Arts Anchor Standards

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#### Reading

- AS.R.1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
  - AS.R.7 Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
  - AS.R.10 Read and comprehend complex literary and informational texts independently and proficiently.
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#### Writing

- AS.W.2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
  - AS.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
  - AS.W.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
  - AS.W.6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
  - AS.W.7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
  - AS.W.8 Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
  - AS.W.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
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#### Speaking and Listening

- AS.SL.1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

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### Assignment and Examination Schedule

Unit #	Completion Date
1	End of QTR 1
2	End of QTR 2
3	End of QTR 3
4	End of QTR 4

Assignments given daily as well as hands on projects and presentations.

### Sophomore:

- Unit 1 Design and Problem Solving
- Unit 2 Assembly Design
- Unit 3 Thoughtful Product Design
- Unit 4 Making Things Move

#### Design Basics

- Lesson 1.1 Design Basics
- Lesson 1.2 Visualization and Solid Modeling
- Lesson 1.3 CAD Fundamentals
- Lesson 1.4 Product Improvement

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## Assembly Design

Lesson 2.1	Put it Together
Lesson 2.2	Take it Apart
Lesson 2.3	A Material World
Lesson 2.4	Fix It

## Thoughtful Product Design

Lesson 3.1	Responsible Design
Lesson 3.2	More Than Parts
Lesson 3.3	Solve a Problem

## Making Things Move

Lesson 4.1	You've Got to Move It May
Lesson 4.2	the Force Be With You
Lesson 4.3	Automating Motion
Lesson 4.4	Make it Move

## Grading Policy:

Students are encouraged to come to class prepared, and participate in all class activities. However in an effort to measure students true knowledge only assessments will be used to calculate the score of all students.

Category	Percentage, %
Participation	10
Class Work	50
Notebooks	10
Presentation	20
Exams	10

## EXPECTATIONS:

### Safety

We expect all students to thoroughly understand and observe any and all possible safety issues inside and outside the classroom. Students will be using power tools and will be soldering for various assignments.

### Effort and Class Participation

We expect all students to give 100% and always try their hardest. This will be demonstrated through daily active participation on all assignments.

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### **Conduct**

We expect all students to adhere to the school's handbook regarding classroom conduct. We believe a student performs at their best in a comfortable, safe environment on the physical and emotional levels. Teasing, bullying, hurtful and disrespectful behavior will NOT be tolerated.

### **Prior to RTII**

1. The pre-engineering department shall identify on a monthly basis any student who has frequent absences, several missed assignments or failing assignments, and a lack of effort within the classroom and lab.
2. The first step once any students have been identified will be a meeting with the student to discuss the students' performance. In the case of necessity guidance and the director of CTE will be notified and met with to evaluate the student's lack of performance. This meeting will allow the student and instructor time to produce a comprehensive plan with the help of a guidance counselor and the CTE director to get the student to the appropriate performance level. This gives the student the opportunity to be a part of his or her education and be part of the plan that will help them to get back on track within the class. During the time of this meeting a time period will be set in which all missing work must be completed.
3. In the case that the student does not follow through and complete the work within the time period set in meeting one, a second meeting will take place. Within the second meeting the student, pre-engineering teacher, CTE director, guidance counselor and the parents/guardians of the students will attend.
4. If student performance continues to decline the student will be referred to RTII (see below for RTII plan)

### **RTII Plan**

1. The pre-engineering department will meet once a month to discuss any potential students who are in the "at risk" category. The "at risk" category is defined as any freshmen or sophomore student missing more than 22 days in one quarter, also any student who fails one full module from the curriculum. The above will apply to juniors and seniors with the exception of if the student misses 11 days or more per a quarter.
2. Once any "at risk" students have been identified a spreadsheet shall be forwarded to guidance and special education. The spread sheet will be filed permanently in the electrical department.
3. A meeting shall be scheduled with the RTII team to discuss further actions to create a comprehensive plan for the student's to succeed.

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4. Upon the student's completion of RTII the Pre-Engineering department shall contact the RTII team to discuss whether the student shall be referred to special education or if they can be dismissed from the Intervention plan.