



# Intro to Engineering Design 2025-2026

Updated: August 12, 2025

## Contact Information

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## WHAT IS PROJECT LEAD THE WAY (PLTW) ENGINEERING?

PLTW Engineering teaches students that real-world problems often have multiple solutions with many pathways to achieve success. With engaging courses like environmental sustainability, civil engineering and architecture, digital electronics, and aerospace engineering, you can empower your students to explore possibilities, experiment, learn from failure, and turn ideas into reality. PLTW Engineering encourages students to adopt a problem-solving mindset, engaging them in compelling, real-world challenges that help them become better collaborators and thinkers.

## 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.

## COURSE ACTIVITIES

Below you will find descriptions of the most common activities that students will participate in during the course of each semester. **Throughout the year, ALL students will:**

- Apply systems thinking and consider various aspects of engineering design including material selection, human-centered design, manufacturability, assemblability and sustainability through both individual and collaborative team activities, projects, and problems.
- Develop skills in technical representation and documentation especially through 3D computer modeling using a Computer Aided Design (CAD) application.
- Produce precise 3D-printed engineering prototypes using an additive manufacturing process.
- Develop testing protocols to drive decision-making and iterative design improvements
- Apply computational methods to inform design by developing algorithms, performing statistical analyses, and developing mathematical models.
- Build competency in professional engineering practices including project management, peer review, and environmental impact analysis as part of a collaborative design team.

## GRADES - Click here for → [YWLA Grading Policy](#)

Major (Exams, Projects, Activities, Presentations) 60%

Minor (Daily Work, Quiz, Homework, Engineering Notebook) 40%



### CLASSROOM RESOURCES

- Google Classroom: <https://classroom.google.com/> code: **5fm4oahr**
- Engineering Notebook and Laptop (provided)

### COURSE OUTLINE (full Course Outline found [here](#))

Lesson	Topic Description	% of Days
Unit 1	Design and Problem Solving	23
1.1	Design Basics	
1.2	Visualization and Solid Modeling	
1.3	CAD Fundamentals	
1.4	Product Improvement	
Unit 2	Assembly Design	26
2.1	Put it Together	
2.2	Take it Apart	
2.3	A Material World	
2.4	Fix It	
Unit 3	Thoughtful Product Design	25
3.1	Responsible Design	
3.2	More Than Parts	
3.3	Solve a Problem	
Unit 4	Making Things Move	26
4.1	You've Got to Move it	
4.2	May the Force Be With you	
4.3	Automating Motion	
4.4	Make it Move	



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## **ADDITIONAL INFORMATION:**

- This class will adhere to the YWLA Grading Policy. Please ensure that you read and understand the policy.
- Feedback will be provided on your assignments and is an important part of the learning process. You will be able to learn from your mistakes and make improvements so that you may be successful in this course.
- The majority of the content will be delivered in-class. Please bring a charged Chromebook to class every day (or you may use the engineering laptops)
- Please adhere to the academic integrity policy found in the student handbook. All students are expected to complete their work individually, unless otherwise instructed.
- The use of AI software (like ChatGPT) to gain an unfair advantage and/or to cheat is strictly prohibited.
- **Group Projects.** There will be some projects/assignments that will be assigned as group work and will be MANDATORY. On group projects, one grade will be given regardless of individual student participation/effort, with some exceptions. If there is a conflict within the group, each student must address it to Zubia personally within a reasonable amount of time. All students are expected to participate in class discussions. Please do not be the student that did not contribute to the group. Please do not hog the work; every student can contribute in one form or another.
- **Engineering Laptops/Equipment.** Each student will be assigned an engineering laptop with a number. Please follow the MISD Code of Conduct regarding computer usage. Any violation will result in privileges suspended. Food/Beverages are not permitted while using the laptop/equipment. Be careful with the engineering equipment! Do not break it! Sorry video gamers: students are not allowed to play computer games including, but not limited to: Minecraft, retro game emulation, or any other internet game.

Please feel free to reach out with any questions or concerns. We are excited to work together to make this a successful year of learning!

Mr. Zubia

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