

**Course Name:** Introduction to Engineering Design

**Duration:**  1 Semester  Full Year

**Grade Level:**  9th  10th  11th  12th (check all that apply)

**Are there any prerequisites for the course?**

None!

**WHAT this course is about:**

Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3-D modeling software, and use an engineering notebook to document their work.

**WHY take this course:**

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. 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.

**WHAT you'll learn:**

- Design and Problem Solving
- Assembly Design
- Thoughtful Product Design
- Making Things Move

**WHAT you'll do:**

Through both individual and collaborative team activities, projects, and problems, students apply systems thinking and consider various aspects of engineering design including material selection, human-centered design, manufacturability, assemblability and sustainability. Students develop skills in technical representation and documentation especially through 3D computer modeling using a Computer Aided Design (CAD) application. As part of the design process, students produce precise 3D-printed engineering prototypes using an additive manufacturing process. Student-developed testing protocols drive decision-making and iterative design improvements.

**WHERE this could take you:**

Students build competency in professional engineering practices including project management, peer review, and environmental impact analysis as part of a collaborative design team. Ethical issues related to professional practice and product development are also presented.

**OPTIONAL Course Outline ("scope and sequence", sequence chart, etc.)**