

Introduction to Engineering Design Syllabus

Course Description/Goals:

In this course, 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.

Course TEKS/Objectives:

Introduction to Engineering Design (IED) is designed to build on foundational engineering concepts with an emphasis on the application of modeling in the engineering design process to develop solutions. Embedded throughout the course are important engineering concepts, such as engineering mindset, systems thinking, and computational thinking. Students will dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. Students will work both individually and in teams to design solutions to a variety of problems using 3-D modeling software and use engineering notebooks to document their work.

<https://tea.texas.gov/academics/learning-support-and-programs/innovative-courses/pltw-introduction-to-engineering-design.pdf>

Course Outline:

Semester 1	Semester 2
<p>Unit 1: Design and Problem Solving</p> <ul style="list-style-type: none">● 1.1 Design Basics● 1.2 Visualization and Solid Modeling● 1.3 CAD Fundamentals● 1.4 Product Improvement Project <p>Unit 2: Assembly Design</p> <ul style="list-style-type: none">● 2.1 Joinery● 2.2 Reverse Engineering● 2.3 Material Properties	<p>Unit 3: Thoughtful Product Design</p> <ul style="list-style-type: none">● 3.1 Responsible Designs● 3.2 Ethics and Human Centered Designs● 3.3 Sustainability Project <p>Unit 4: Making Things Move</p> <ul style="list-style-type: none">● 4.1 Mechanisms and Motion● 4.2 Forces● 4.3 Circuits and Motion● 4.4 Electromechanical Project

- 2.4 Redesign Project