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## Introduction To Engineering (IED) Course Description

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Introduction to Engineering Design (IED) is a high school level course that is appropriate for 9th or 10th grade students who are interested in design and engineering or another technical career. The major focus of the IED course is to expose students to a design process, professional communication and collaboration methods, design ethics, and technical documentation. IED gives students the opportunity to develop skills in research and analysis, teamwork, technical writing, engineering graphics, and problem solving 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 and creative abilities while applying math, science, and technology knowledge learned in other courses to solve engineering design problems and communicate their solutions. IED also allows students to develop strategies to enable and direct their own learning, an ultimate goal of education.

No previous knowledge is assumed, but students should be concurrently enrolled in college preparatory mathematics and science courses in order to facilitate the use and understanding of appropriate math and science concepts necessary for the successful completion of IED coursework. In addition, students will use industry standard 3D solid modeling software to facilitate the design and documentation of their solutions to design problems and challenges. As the course progresses and the complexity of the design problems increase students will learn more advanced computer modeling skills as they become more independent in their learning, more professional in their collaboration and communication, and more experienced in problem solving.

Introduction to Engineering Design is one of the foundation courses in the Project Lead The Way high school pre-engineering program. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

The course of study includes:

- Design Process
- Technical Sketching and Drawing
- Engineering Documentation and Drawing Standards
- Measurement and Statistical Analysis
- Applied Geometry
- 3D CAD Solid Modeling
- Reverse Engineering
- Product Design
- Engineering Ethics
- Virtual Design Teams
- Presentation Design and Delivery