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| **Introduction To Engineering Design (IED) Course Description** |

Introduction to Engineering Design (IED) is a course that is appropriate for 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

**Essential Questions (Course-Wide)**

1. How does the design process promote the development of good solutions to technical problems?
2. How can an engineer or technical professional effectively communicate ideas and solutions in a global community?
3. How do inventors and innovators impact and shape society?

**Grading –** Your grade will be determined based upon a total point system. Each assignment will carry a point value based upon the following criteria. Your final grade will be determined by the percentage of points you earn out of the points possible.

**Projects/Tests**: 50-100 pts

**Quizzes**: 25-50 pts

**Notebook Checks**: 100 pts

**HW**: 10 points

**PLTW End-of-Course Exam**: Counts as a test in MP4. Scored similar to AP exams only on a 9 point scale. Earn a 6 or higher and you could earn college credit!

**Class Expectations**

1. Quad-ruled Notebook, 9-3/4" x 7-1/2" 100 pages.
   1. Everything we do in the class goes into this notebook.
2. Students will be given significant independence in this course, so you must pace yourself as you work. I will provide you with deadlines when things are due
3. Cell phones, ipods, ipads, electronics, etc. – keep them away during class, period.
4. Do not cheat. What is cheating? Anything you represent as your own that is not, period.
5. Bathroom passes
   1. One student at a time. May not go in the first 5 minutes of class while I'm getting things started, attendance, etc.
   2. Rule of thumb is five minutes. If you need more time for personal reasons, talk to me privately. Habitual abusers will lose their privilege.
6. All missed work, including tests/quizzes due to an absence must be made up within a reasonable time of absence.

**SUPPLIES:**

* **Engineering Notebook** (required) – composition notebook with ¼ inch graph paper.  
  (you can normally find these at any office supply store)
* **Pens or Pencils** – students will be writing in their engineering notebooks EVERYDAY, they will need good pencils or pens for class. (I highly recommend several different colors) **Headphones** – students with watch several short instructional videos and tutorials that require them to have headphones.