



PROJECT LEAD THE WAY

PLTW

STEM



Engineering Courses at New Trier

Courses offered at New Trier

Introduction to Engineering Design (IED)

A course that teaches engineering problem solving skills using a design development process. Covered topics:

- Solid Modeling
- Rapid Prototyping
- Design Principles
- Assembly Drawings
- Stress Analysis

**IED is a prerequisite for Principles of Engineering, Biotechnical Engineering and Civil and Structural Engineering*

Principles of Engineering (POE)

This course exposes students to some of the major concepts they'll encounter in postsecondary engineering courses. Students employ engineering and scientific concepts in the solution of engineering design problems. Covered topics:

- Engineering Fundamentals
- Problem Solving
- Designing Solutions for "Real World Problems"
- Prototyping

Biotechnical Engineering (BE)

Lessons will engage students in engineering design problems related to biomedical engineering, cardiovascular engineering, genetic engineering, agricultural engineering, biotechnology, tissue engineering, biomedical devices, and bioethics.

Civil and Structural Engineering (CSE)

Students learn about various aspects of civil engineering and architecture and apply their knowledge to the design and development of residential and commercial properties and structures. Students communicate and present solutions to their peers and members of a professional community of engineers. Topics include, but not limited to, building components and systems, structural design, road construction and design, storm water management, site design, utilities and services, cost estimation, and energy and efficiency.

Why take an engineering elective?

Gives students the opportunity to explore engineering before a college decision is made.

- Experience "real-world" hands-on engineering projects
- Better prepares students for success in future college engineering programs
- Exposes students to multiple areas of engineering study
- Exposes students to cutting edge technologies and software
- Meet and work with engineers from various industries in the area
- Receive college/university credit

Who should take these courses?

- Interested in being engineers or technologists
- Good in art and design
- Good in mathematics and science
- Learn well in "hands-on" classes
- Enjoy solving problems
- Enjoy working with computers
- Learn best by "doing"
- Desire to help others and improve the standard of living



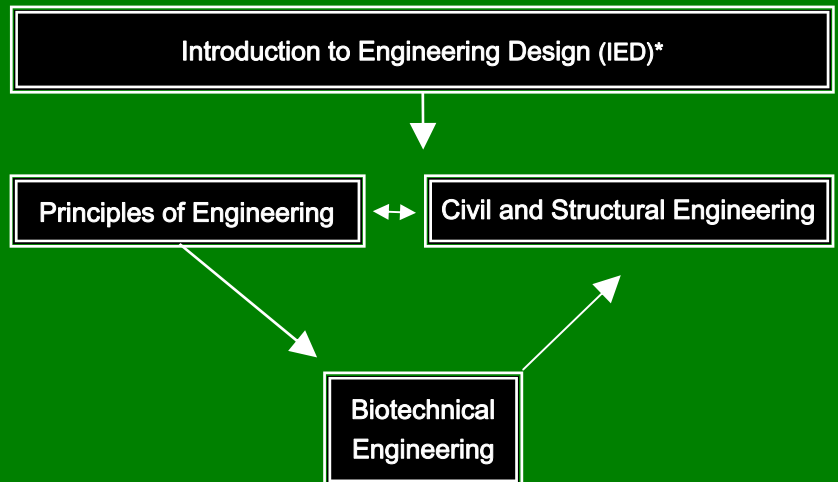
Facts and College Options:

PLTW Facts:

- **PLTW works.** When surveyed, **80%** of the high school seniors in the program indicated their primary area of study after high school would be in engineering, technology or computer science.
- PLTW helps influence and engage females in engineering. **Female student participation** in PLTW courses (**17%**) exceeds or is comparable to the fields of Mechanical (**13.7%**), Electrical (**15%**) and Computer Engineering (**12.1%**), and in Engineering Technology (**11.7%**).
- In college, engineering majors have a high dropout/switch major percentage because students never experienced engineering in high school. **85% student retention** rate in 2nd year compared to **40% nationwide**.
- Observations by independent entities have shown that PLTW **increases student aptitude in STEM** (Science, Technology, Engineering & Math) fields and increases **retention rates** in college **engineering programs**.
- **University of Wisconsin-Madison** suggests that students who take PLTW courses achieve **higher test scores** in non-STEM subject areas.
- PLTW alumni study engineering and technology at **5 to 10 times the rate** of non-PLTW students.
- PLTW students **exceeded** the average **academic growth rate** over one year of the virtual control group in science concepts and processes and mathematics. PLTW students also exceeded the average academic growth rate over one year of non-PLTW students in science concepts and processes and mathematics. (2010 study)
- Currently there are over **1,300,000 engineering jobs available** in the U.S. without trained people to fill them. We need more engineers!



New Trier Project Lead the Way Course Sequence:



College Options:

Any Project Lead the Way course taken at New Trier will have a designated PLTW title listed on your transcript. Over 20 national affiliated colleges and universities administer PLTW. Students who earn a "B" average or higher in their PLTW course and pass a college credit exam (similar to an AP Exam) are eligible to register for college credit at participating schools.

Some schools do not give direct college credit. However, they look for high school pre-engineering courses (PLTW) on a student's application. They also encourage students to discuss those courses/experiences in their essays.

