PROJECT LEAD THE WAY

PLTW

Engineering & STEM Courses at New Trier

Courses Currently Offered:

Introduction to Engineering Design

This course encourages students to think like engineers through a "design thinking" approach that allows them to develop unique solutions to design problems. Students engineer using a hands-on approach, 3D-modeling software, 3D printers, 3D scanners, laser cutters, and various other tools to bring their ideas to prototype and then to life. Students also learn how to properly document their work and communicate solutions.

⇒ *IED is a prerequisite for future PLTW courses*

Principles of Engineering

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

Biotechnical Engineering

This course engages students in engineering design problems related to biomedical engineering, cardiovascular engineering, genetic engineering, agricultural engineering, biotechnology, biomedical devices, and bioethics.

Digital Electronics

Digital electronics is the foundation of all modern electronic devices such as mobile phones, MP3 players, laptop computers, digital cameras, and high-definition televisions. Students are introduced to the process of combinational and sequential logic design, engineering standards, and technical documentation.

Civil Engineering and Architecture

This course introduces students to various aspects of civil engineering and architecture. Topics include, but are not limited to, building components and systems, structural design, road design, storm water management, site design, utilities and services, cost estimation, and energy efficiency.

Summer School Option:

Research and Development through Engineering

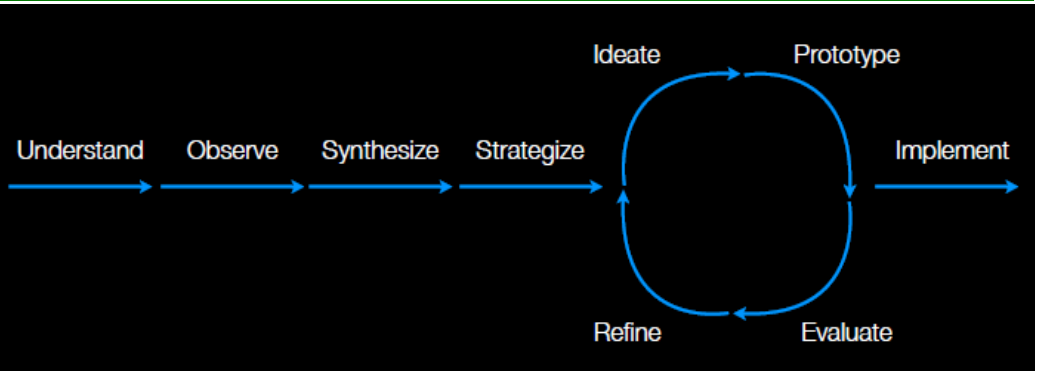
Why take a PLTW elective?

- To experience "real-world" hands-on projects;
- To prepare for future college engineering programs;
- To gain exposure to multiple areas of engineering study;
- To experience cutting edge technologies and software;
- To meet and work with engineers from various industries in the area;
- To receive college credit, scholarship opportunities, and engineering experience; and
- To explore the field of engineering before deciding on a college and major.

PLTW courses develop and enhance:

- An interest in engineering, medical, or technological fields;
- A mindset for innovation;
- Design and problem-solving skills;
- Hands-on, project-based learning;
- Project-management skills;
- Professional computer and equipment operating skills;
- The connection between art, design, mathematics, and science; and
- A desire to help others and improve the quality of life.

PLTW courses emphasize innovative solutions to **ill-structured** problems.



Facts and College Options:

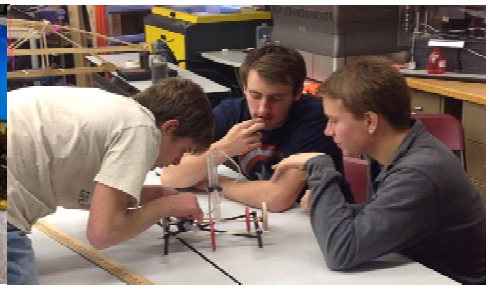
PLTW Facts:

- **PLTW works**. When surveyed, **85%** 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 women in engineering. **Female student participation** in PLTW courses exceeds or is comparable to participation in college engineering programs.
- In college, a high percentage of engineering majors drop out or change their major because they did not experience engineering in high school. **PLTW students have an 85% student retention** rate in the 2nd year compared to **40% nationwide**.
- Observations by independent entities have shown that PLTW **increases student aptitude in STEM** fields and increases **retention rates** in college **engineering programs**.
- **The University of Wisconsin-Madison** suggests that students who take PLTW courses achieve **higher test scores** in non-STEM subject areas.
- PLTW students exceeded the average academic growth rate over one year of non-PLTW students in science concepts, processes and in 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!

College Planning and Options:

Any Project Lead the Way course taken at New Trier has a designated PLTW title listed on the transcript. 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 transcript. They also encourage students to discuss their experiences in those courses in their essays.



PLTW Course Offerings @ New Trier:	Level Options	9th	10th	11th	12th
Introduction to Engineering Design*	Elective Credit	X	X	X	X
Principles of Engineering (Mechanical)*	9, 4		X	X	X
Civil Engineering and Architecture	9, 4		X	X	X
Digital Electronics	9, 4			X	X
Biotechnical Engineering	9, 4			X	X
Research and Development through Engineering	Elective Credit			Summer School Option	

* Denotes prerequisite option for other engineering courses