



## ENGINEERING & TECHNOLOGY EDUCATION KENMORE EAST & KENMORE WEST HIGH SCHOOLS

### Project Lead the Way – Pathway to Engineering

#### *What is Project Lead the Way (PLTW)?*

The PLTW Pathway to Engineering Program is a hands-on and project-based sequence of study that engages students in a real-world learning environment. Students explore science, technology, engineering, and mathematics (STEMs) in a unique, nontraditional manner that allows students to not only see concepts on paper, but learn through experience and experimentation. For further information on this nationally recognized program go to: [www.pltw.org](http://www.pltw.org).

#### *What courses are available in the PLTW program?*

The following PLTW courses are available during the 2018-2019 school year:

##### **Design & Drawing for Production (DDP):**

This course follows the NYSED published curriculum guide for DDP, which affords all course completers the opportunity to satisfy the art/music/design graduation requirement. Students participate in a wide-variety of classroom activities that involve the completion of design projects using both traditional and modern techniques. Learning takes place through hands-on learning in the District's updated prototyping labs. DDP is a prerequisite for all other PLTW courses, but may also be taken as a stand-alone course.

##### **Computer Integrated Manufacturing (PLTW CIM):**

The major focus of this course is to answer the question: How are things made? What processes go into creating products? Is the process for making a water bottle the same as it is for a musical instrument? How does an assembly line work? As students find the answers to these and other questions, they learn about the past, present, and future of manufacturing. This course is built around several key concepts: automation, robotics, computer modeling, Computer Numeric Control (CNC) equipment, and Computer Aided Manufacturing (CAM).

##### **Principles of Engineering (PLTW POE):**

This survey course of engineering exposes students to some of the major concepts they'll encounter in a postsecondary STEM course of study. Students have an opportunity to investigate engineering and high-tech careers and to develop skills and understanding of course concepts. Students employ engineering and scientific concepts in the solution of engineering design problems. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges.

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### **Digital Electronics (*PLTW DE*):**

Students in this course study electronic circuits that are used to process and control digital signals. Digital electronics is the foundation of all modern electronic devices, such as cell phones, computers, communication systems, digital cameras, high-definition televisions, and MP3 players. The major focus of the DE course is to expose students to logic design, teamwork, communication methods, and engineering standards.

### **Engineering Design & Development (*PLTW EDD*):**

PLTW EDD is the final, capstone experience in the Project Lead the Way sequence of learning. In this unique design course, students work in teams to engineer and develop original solutions to valid open-ended technical problems by applying the engineering design process. Students perform research to choose, validate, and justify a technical problem. After carefully defining the problem, teams design, build, and test their solutions while working closely with industry professionals who provide mentoring and feedback. Finally, student teams present and defend their original solution to an outside panel.

### **PLTW/AP Computer Science Principles (*PLTW/AP CSP*)**

Incorporating multiple platforms and languages for computation, this course aims to develop computational thinking, generate excitement about career paths that utilize computing, and introduce professional tools that foster creativity and collaboration. Computer Science Principles helps students develop programming expertise and explore the workings of the Internet. Projects and problems include app development, visualization of data, cybersecurity, and simulation.

### ***What are the advantages of PLTW and technology education?***

Students have many course choices as they plan their high school career. The faculty of the Technology Education Department works to attract students to the program who will benefit most from the curriculum. Advantages to taking PLTW and technology education courses include:

- All students may earn college credit through an agreement with the Rochester Institute of Technology (RIT) and participating PLTW universities across the nation.
- **Sign-up for Design & Drawing for Production (DDP) to satisfy the 9<sup>th</sup> grade art/music/design requirement!**
- PLTW POE may be used as a substitute for a third year of science credit and PLW DE may substitute as a third unit of mathematics.
- **Regents Advanced Designation – A five-unit sequence in Technology Education may be used to satisfy the LOTE requirement to earn Advanced Designation.**

### ***Other Technology Education courses and opportunities....***

All high school students may take PLTW courses or general Engineering & Technology Education courses. Other courses available to **all students** as electives include:

- Architecture
- Electricity & Electronics
- Tool Time (*Manufacturing*)
- Tool Time 2 (*Materials*)
- Networking 1 & 2 (*Cisco networking*)
- Construction Systems
- Media Design & Video Production
- Computer Aided Design (CAD)
- Advanced CAD
- Graphic Communications