



# PROJECT LEAD THE WAY ENGINEERING ACADEMY

## PROGRAM GUIDE

**2024-2025**



## *Project Lead the Way – Highlights*

### Overview

[Project Lead The Way](#) is a national initiative to prepare high school students for a future in the exciting and ever-changing world of Technology and Engineering Technologies. Project Lead The Way is currently being offered in over 5000 schools in all 50 states across the USA.

When you take a PLTW class you will not only be working with hundreds of Lancaster classmates, but you will also be working with tens of thousands of classmates across the United States. So, sign up today for your first class in Project Lead The Way, and take a step in the right direction for your future! See your Counselor today.

You may also consider following our Twitter page [@LHSNYtech](#)



### PLTW as an Academy

PLTW is recognized as an academy and requires an application for continuation in the program. As in the past, you can still take PLTW in tandem with another Academy. Just be aware that this may cause scheduling conflicts and you will likely sacrifice a lunch period in that year.

Applications are done in February and acceptance letters are sent out (via email for PLTW applicants) in early March. Check your school email for your letter at that time and confirm receipt in the email. If accepted, sign up for the next PLTW course with your counselor for the upcoming school year...and start engineering greatness!

### Program Notes

- ★ Any Project Lead The Way courses may be used to fulfill the third year of Math or Science as required by NYS Regents.
- ★ Project Lead The Way classes may be eligible for RIT college credit.
- ★ Project Lead The Way students can apply for AP College Board Recognition.
- ★ All students will need to complete the application process for the Engineering Academy during their freshman year.



## *Project Lead the Way Course Descriptions*

### Engineering Design and Drawing for Production (DDP) - Honors

A Solid Modeling Approach

*9162 Grades 9,10, 11, 12*

*1 credit - honors*

★Recommended: Currently maintaining an 80%+ in 8<sup>th</sup> grade Math

►Note 1: Students apply to the Engineering Academy (PLTW) during their freshman year to continue the Program.

►Note 2: Course satisfies the 1 Regents credit for Art/Music, regardless of advancing into the PLTW program.



For all students interested in the Project Lead The Way or Manufacturing and Skilled Trades Academies or any career path in Science, Technology, Engineering, or Mathematics.

Students use the engineering design process, science, and engineering principles to complete hands-on projects. You will work both individually and in teams to design solutions to a variety of problems using 3D modeling software, 3D printing technology creating drawing sheets to document their work. Software utilized: Autodesk Inventor.

### Computer Science Essentials (CSE)

*9119 Grades 9, 10, 11, 12*

*½ credit- honors*

- ★Recommended:
- (1) For all students with a general interest in Computer programming and robotics.
  - (2) Strong background in Math and Science



Students will experience the major topics, big ideas, and computational thinking practices used by computing professionals to solve problems and create value for others. This course will empower students to develop computational thinking skills while building confidence that prepares them to advance to Computer Science Principles and Computer Science A.

### Principles of Engineering (POE)

*9172 Grades 10, 11, 12*

*1 credit- honors*

★Recommended: Honors DDP or Teacher permission from DDP Tech

★Recommended: Permanent or probationary acceptance into the PLTW program



Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation.

## AP Computer Science Principles (CSP)

*9129 Grades 10, 11, 12*

*1 credit*

- ★ Strongly recommended: Honors Computer Science Essentials or 1 year of programming experience.
- ★ Recommended: Strong background in Math and Science



Open doors in any career with computer science! CSE implements the College Board's 2013 CS Principles framework. Using Python® as a primary tool and 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. In CSE, students create apps for mobile devices, automate tasks in a variety of languages, and find patterns in data. Students collaborate to create and present solutions that can improve people's lives and weigh the ethical and societal issues of how computing and connectivity are changing the world.

## Digital Electronics (DE)

*9120 Grades 11, 12*

*1 credit- honors*

- ★ Recommended: Honors DDP and POE, can take POE or CIM concurrently
- ★ Recommended: Enrolled or Passed level 2 Math
- ★ Recommended: Permanent or probationary acceptance into the PLTW Academy.



From smartphones to appliances, digital circuits are all around us. This course provides a foundation for students who are interested in electrical engineering, electronics, or circuit design. Students study topics such as combinational and sequential logic and are exposed to circuit design tools used in industry, including logic gates, integrated circuits, and programmable logic devices.

Possible career opportunities consist of Digital Electronics Engineers/Technicians, ranging from designing and manufacturing electrical systems to installing to repairing them. Digital electronic engineers design an assortment of electronic equipment, such as control systems, music players and global positioning systems.

## Computer Integrated Manufacturing (CIM)

*9130 Grades 10, 11, 12*

*1 credit- honors*

- ★ Recommended: Honors DDP or permission from DDP Tech
- ★ Recommended: Permanent or probationary acceptance into the PLTW Academy.



Manufactured items are part of everyday life, yet most students have not been introduced to the high-tech, innovative nature of modern manufacturing. This course illuminates the opportunities related to understanding manufacturing. At the same time, it teaches students about manufacturing processes, product design, robotics, and automation.

## Design and Prototyping Lab (DPL)

*9113 Grades 10,11,12*

*½ credit*

⚙️ Highly Recommended: All PLTW students should take this course to enhance their program experience.

★ This is not an official PLTW course

Fabrication Studio is hands-on experience in designing and manufacturing a product. Students will work as a team to design a product and organize all the production needs from materials needed to processing tools and machines. Students may be exposed to cutting edge production methods like CNC Machining, Laser Cutting, and 3D Printing.

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## Engineering Design and Development (EDD) – The Capstone Class

*9173 Grade 12*

*1 credit- honors*

★ Recommended: Instructor approval – Honors DDP, DE, POE. Students can take POE, CIM, CSP, or DE concurrently.

★ Recommended: Permanent or probationary acceptance into the PLTW Academy.

EDD is a college preparatory course designed to prepare students for the rigor of an engineering program. Students will work in one team for the entire year to solve a real-world problem. In addition to completing the design project, students will learn valuable skills for competing in a demanding college environment. Student grades will be based on a combination of individual and group work.