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Take charge of your future with the successful completion of a CTE track in technology.

Some technology courses are offered every other year, please check the descriptions to see if your favorite course is available next year.

The Career Path Road Map

Trade/CTE (Hands on Focus)

** and strikethrough indicate course is not offered 2022-23*

- Drawing and Design for Production (Tech or Engineering)
- Home Repair and Maintenance I - ½ year
- Home Repair and Maintenance II – ½ year
- ~~*Construction Systems – ½ year~~
- ~~*Manufacturing Systems – ½ year~~
- Design and Fabrication Lab – ½ year
- Basic Electricity and Electronics – ½ year
- ~~*Transportation Systems – ½ year~~
- Architectural Drafting – ½ year
- 3D Architectural Design – ½ year

Trade/CTE (Computer Focus)

** and strikethrough indicate course is not offered 2022-23*

- Drawing and Design for Production (Tech or Engineering)
- Computer Graphics - ½ year
- Computer Animation – ½ year
- Media Productions
- ~~*CG3 Animation Studio~~
- Computer Science Engineering (Honors)
- Basic Electricity and Electronics – ½ year
- Architectural Drafting – ½ year
- 3D Architectural Design – ½ year

Project Lead the Way (Honors)



- Gr 09: Drawing and Design for Production (DDP)
- Gr 09: **NEW**- DDP/CS
- Gr 10: Computer Science Essentials ½ year
- Gr 10: Principles of Engineering (POE)
- Gr 10: AP Computer Science Principles (APCSP)
- Gr 11: Digital Electronics (DE)
- Gr 11: Computer Integrated Manufacturing (CIM)
- Gr 12: Engineering Design and Development

Manufacturing & Skilled Trades Academy



- Gr 10: Trade Apprentice Survey
- Gr 10: Trade Apprentice Tech
- Gr 11: Trade Journeyman Survey
- Gr 11: Trade Journeyman Tech
- Gr 11: Manufacturing Trades
- Gr 11: Print Trades
- Gr 12: Trades Senior Project 1
- Gr 12: Trades Senior Project 2



Trade / CTE Technology - Course Descriptions

Home Repair and Maintenance I

9115 (Fall) Grades 9, 10, 11, 12

½ credit

Learn how construction is done. A variety of hand and power tools will be used to complete laboratory activities. The student will also have an opportunity to become familiar with the various materials and fasteners used in home repair and maintenance. Various systems in the home will also be studied: heating, water, electrical, security, sound, etc. Student can develop entry-level skills for future employment in the construction industry.

Home Repair and Maintenance II

9225 (Spring) Grades 9, 10, 11, 12

½ credit

This is a hands-on course covering residential structures. Students will learn basics in carpentry, masonry, plumbing and electrical skills used to build a residential structure. Maintenance and repair of various systems will be stressed. Local building codes and new materials will be investigated. Student can develop entry-level skills for future employment in the construction industry.

Basic Electricity / Electronics

9110 Grades 9, 10, 11, 12

½ credit

This course is designed to introduce students to the elements of electricity and electronics. This course offers a hands on experience in building various projects, house wiring, and Basic Electricity/Electronics using circuit boards. This offers an overview of the largest growing field today.

Architectural Drafting and Design

9177 Fall Grades 9, 10, 11, 12

½ credit

This course will introduce students to the basic elements of the Architectural profession and the work of an Architect. Students will be introduced to drafting Architectural plans, such as site plans, floor plans, front elevations, and foundation plans. We will also focus on construction techniques and terminology used to create a building and standards used in the industry. Architectural Drafting & Design is a project-based course that involves drawing and model building. This course prepares students for college courses in the areas of architecture, interior design, structural/civil engineering, and drafting.

3D Architectural Design

9174 Spring Grades 9, 10, 11, 12

½ credit

★ Recommendation: Architectural Drafting

This course will build upon the basic elements learned in Architectural Drafting by introducing cutting edge 3-Dimensional software that will be used to create Architectural structures. Students will produce computer-generated drawing sheets that contain items such as floor plans, elevations, schedules, and 3D realistic renderings. We will utilize *Autodesk Revit* software.



Computer Graphics

9127 Fall Grades 9, 10, 11, 12

½ credit

Interested in creating images for a game or internet site? This course is your starting place! Learn the CGI basics of Adobe Photoshop and Illustrator while getting hands on experience using scanner applications, image correction, and illustration layout. Students will use a variety of Adobe software programs to develop layouts which are used in the CGI industry today.

Computer Animation

9128 Spring Grades 9, 10, 11, 12

½ credit

Make your images move! The basics of cell frame animation, movement in a 3-D space, adding sound to a project, recording and editing your own audio will be taught. Use your Multi-media projects for a college application, or you can use your new knowledge to create great presentations for your other classes. Adobe Photoshop, Adobe After Effects, Audacity, Adobe Audition and other CGI industry standard programs will be used.

Media Productions

9131 Grades 10, 11, 12

1 credit

⊗ Required: Computer Graphics, Computer Animation or teacher permission

Making Movies! Media Productions will show you what it takes to create various media for the Internet, a business, or for your own enjoyment. Included will be the study of the design elements (scenery, sound and lighting), Green/Blue screen work, and enhancing the video editing techniques learned in Computer Animation (including special effects!). The Adobe Creative Suite will be used throughout the course and you'll create a DVD of your projects for future use.

Design and Drawing for Production (DDP) – Tech (3D Modeling Approach)

9175 Grades 9, 10, 11, 12

1 credit

★ Course will satisfy the 1 unit of Regents credit for Art/Music

▶ Upon successful completion of Tech DDP (this course), an interested and competent student, with the instructor's permission, may apply for the Project Lead the Way Academy.

An introductory course, focusing on utilizing the design process to solve technical problems with 2 dimensional drawing techniques and 3 dimensional modeling capabilities. DDP Tech has been designed to replace the traditional CAD class, and offers the skills developed in the Engineering DDP course for students interested in 3-D modeling, but not necessarily in the pre-engineering program (PLTW)



Project Lead the Way Course Descriptions

NEW Design and Drawing for Production/Computer Science

9163 *Grades 9,10,11,12*

1 credit – honors

★ Recommended: Currently maintaining a 90%+ in 8th grade Math

Note 1: For students with an interest in programming and design

Note 2: Students will apply to the Engineering Academy during their freshman year to continue in the program

Note 3: Course satisfies the 1 Regents credit for Art/Music, regardless of advancing in the PLTW program.

For all students interested in the Project Lead The Way Academy or any career path in Science, Technology, Engineering, or Mathematics.

This class was designed to give our aspiring PLTW students a taste of the world of Engineering Design and Computer Science within the same year. In this exciting new course, students will get to explore both the Engineering DDP and CS Essential courses, with instruction from two of our PLTW Academy teachers. Please see the course descriptions for both classes for more information. Class is limited to 42 students.



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 8th grade Math

▶ Note 1: Students will apply to the Engineering Academy (PLTW) during their freshmen year to continue in 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

- ★ Recommendation: This course is open to all sophomore level and higher PLTW, Math and Science majors. Any student with an interest in computer programming sciences is welcome.

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 smart phones 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.



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.

