STEM ENGINEERING AND TECHNOLOGY

Course Title	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
STEM and Technology Engineering	X	X	X	X	X
Project Lead the Way (PLTW): Introduction to Engineering Design	X	X	X	X	X
Project Lead the Way (PLTW): Computer Integrated Manufacturing		X	X	X	X
Project Lead the Way (PLTW): Principles of Engineering with Physics			X	X	X
Project Lead the Way (PLTW): Engineering Design and Development			X	X	X
Wood Technology I		X	X	X	X
Intro to Construction Trades			X	X	X

The STEM Engineering and Technology Program at Mound Westonka High School is designed to provide our students the skills and experiences to develop 21st century competencies that will assist them with becoming technologically literate citizens and provide them a solid preparation for future educational and career opportunities.

Through the STEM Engineering and Technology courses, students will be using cutting-edge software and devices used in 21st century companies that involve 3D and laser printers, CAD software and CNC equipment. A number of the courses offer opportunities for college credit and all classes provide students real-world applications in the field of engineering and technology.

STEM ENGINEERING AND TECHNOLOGY

STEM and Technology Engineering

Course #: 0291 – Semester Elective
Grade Levels: 8 - 12
Prerequisites: None
Course Description: This semester class will explore the world of engineering and technology through hands-on learning experiences, real-life simulations and lab activities. Students will be working with a wide range of state-of-the-art equipment such as 3D printers, laser printers, computer-aided drafting (CAD) 2D and 3D software and wood working machinery to create their projects. The goal of this course is to provide students the skills and experiences to develop 21st century competencies that will lead to a solid preparation for future educational and career opportunities. **There is a $20.00 fee for class materials.**
Instructional Method and Assessments: Hands-on and direct teaching instruction. Students are assessed based on completion of projects**.**
Basis for Student Success: Consistent attendance, participation, and ability to work independently and in a group atmosphere.

PLTW Introduction to Engineering Design

Course #: S1 (0292), S2 (0293) – Year Long Elective
Grade Levels: 8 - 12
Prerequisites: Completed Algebra or Algebra X
Course Description: In this course, students use 3D solid modeling design software to help them design solutions to solve proposed problems. Students will learn how to document their work and communicate solutions to peers and members of the professional community. The major focus of the IED course is to expose students to the engineering design process and provide students the skills and experiences to develop 21st century competencies that will lead to a solid preparation for future educational and career opportunities. **Possible to earn 3 college credits. There is a $10.00 fee for class materials.**
Instructional Method and Assessments: Hands-on and direct teaching instruction. Students are assessed based on class assignments and project completion**.**
Basis for Student Success: Consistent attendance, participation, and ability to work independently and in a group atmosphere.

PLTW Computer Integrated Manufacturing

Course #: S1 (0294), S2 (0295) – Year Long Elective
Grade Levels: 9 – 12
Prerequisites: Completed Geometry X or Geometry with Stats
Course Description: This course will address how the modern world is made. Engineers invent, design, and prototype the technology that we use. Manufacturing processes are used to mass produce inexpensively and with high quality of products we need and want. This class will take you

from design to product using design software, CNC machining, robotic automation and control to develop student expertise using state-of-the-art computer integrated manufacturing processes. **Possible to earn 3 college credits. There is a $20.00 fee for class materials.**

Instructional Method and Assessments: Hands-on and direct teaching instruction. Students are assessed based on class assignments and project completion**.**

Basis for Student Success: Consistent attendance, participation, and ability to work independently and in a group atmosphere.

PLTW Principles of Engineering with Physics

Course #: S1 (0289), S2 (0290) – Year Long Elective

Grade Levels: 10 – 12

Prerequisites: Must be enrolled in or completed Algebra II or Algebra II X

***This course satisfies one of the three credit science requirements (includes biology and chemistry or physics) in physics for graduation**

Course Description: This survey course of engineering exposes students to some of the major concepts they'll encounter in a postsecondary engineering course of study. Students will have an opportunity to investigate engineering and high-tech careers and employ engineering and scientific concepts in the solution of engineering design problems. The course will also address physics topics that include electricity and magnetism, electric circuits, energy and work, and waves, sound and light. In addition, students will develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges. **Possible to earn 3 college credits. There is a $10.00 fee for class materials.**

Instructional Method and Assessments: Hands-on and direct teaching instruction. Students are assessed based on class assignments and project completion**.**

Basis for Student Success: Consistent attendance, participation, and ability to work independently and in a group atmosphere.

PLTW Engineering Design and Development

Course #: S1 (0287), S2 (0288) – Year Long Elective

Grade Level: 10-12

Prerequisites: Introduction to Engineering, Computer Integrated Manufacturing, or Principles of Engineering and completed GeometryX or Geometry with Stats

Course Description: This is the capstone course in the PLTW high school engineering program. It is an engineering research course in which students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. Students present their proposed problem to a panel of professional engineers and after carefully defining the problem, teams of students will research, design, build, and test their prototypes and present their final solution to a panel of professional engineers. **There is a $10.00 fee for class materials.**

STEM ENGINEERING AND TECHNOLOGY

Instructional Method and Assessments: Hands-on and direct teaching instruction. Students are assessed based on class assignments and project completion**.**
Basis for Student Success: Consistent attendance, participation, and ability to work independently and in a group atmosphere.

Wood Technology I

Course #: 0296 – Semester Elective
Grade Levels: 9 - 12
Prerequisites: None
Course Description: This course is designed to give students an introduction to wood technology and the development of the wood product industries. It will introduce them to working drawings, shop math, machines used in the production of forest products, and the estimating and purchasing of lumber products. The class uses a textbook, worksheets, and each student will be responsible for assigned projects. Each student must pass all safety tests. **There is a $50 fee for class materials (ex. wood, glue, nails, sandpaper, etc.). Students are responsible for the purchasing of lumber for their class projects.**
Instructional Method and Assessments: Hands-on and direct teaching instruction. Students are assessed based on class assignments and project completion**.**
Basis for Student Success: Consistent attendance, participation, and ability to work independently and in a group atmosphere.

Introduction to Construction Trades

Course #: 0297 – Semester Elective
Grade Levels: 10 - 12
Prerequisites: Woods 1
Course Description: . This course is designed for students who are interested in learning about basic construction skills. Students will learn workplace safety, safe operation of power tools and machinery related to the construction field. This course will offer hands-on opportunities to learn all phases of basic residential construction, including framing, drywall, electrical, flooring, painting, plumbing, roofing, and reading of blue prints. **There is a $40 course fee associated with this class to cover the cost of materials consumed. There may be an additional project fee based on the size of individual student projects.**

Instructional Method and Assessments: Hands-on and direct teaching instruction. Students are assessed based on class assignments and project completion**.**

Basis for Student Success: Consistent attendance, participation, and ability to work independently and in a group atmosphere.