

Engineering Academy/Technical Education Requirement

Technology Education courses offer students instruction in a variety of areas which may be of interest to life experiences or may lead to a profession related to technology and engineering. Basically, students take a technology course for two main reasons: (1) to gain the foundation for seeking further education in an engineering field (via Whitman's Engineering Academy) and/or (2) to fulfill the technology education graduation requirement.

Tech Ed Requirement

There are three courses that will satisfy the state mandated requirement for the one credit of technology education needed for graduation: (1) Introduction to Engineering Design (IED), (2) Principles of Engineering (POE), and (3) Foundations of Technology (FOT). A student only needs to take and pass one of these to satisfy the basic technology education credit for graduation.

Important considerations when choosing between IED, POE or FOT:

- FOT does not have a math prerequisite, whereas IED or POE is taken after completion of Algebra I.
- POE satisfies the prerequisite needed to take advanced level Engineering courses; however, IED and FOT will not satisfy such a prerequisite.
- IED and POE are college level courses that are part of the Project Lead the Way (PLTW) curriculum; FOT is not a PLTW course. POE is honors level and grade weighted.
- Pyle Middle School offers the IED course.

A student that wants to fulfill the tech ed requirement, but does not intend on taking further technology or engineering courses, may be more interested in taking the Introduction to Engineering Design or the Foundations of Technology course at Whitman. A student who likes math and science or a student who enjoys building projects may be more interested in the Principles of Engineering Course. Students who intend to take elective engineering courses should take the Principles of Engineering course.

About IED: The main focus of the Introduction to Engineering Design is design. A student gets well versed in using Engineering CADD (Computer Aided Drafting and Design) software. The CADD Software used in IED is Inventor 2009. In IED, students learn to draw and sketch simple to complex stagnate objects or components. Students apply higher-level mathematics specific to Algebra I and Geometry I.

About POE: The Principles of Engineering course focuses on the various fields of engineering itself. POE is an Advanced Level course that requires higher level math skills. Students can take POE without taking IED first. Algebra I and Geometry concepts are used throughout this course. Engineering projects in POE relate to the various engineering fields; for example, bridge and structure design projects and testing relate to civil and materials engineering, and robotics and automation projects related to systems and mechanical engineering. POE also covers electrical engineering concepts.

About FOT: In the Foundations of Technology course students will explore and develop a deep understanding of the characteristics and scope of technology and the influence on history, along with the relationships and connections between technology and other fields of study. Students will develop

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an understanding of the attributes of design and develop skills by using the design process to solve technological problems.

Whitman's Engineering Academy

Project Lead The Way (PLTW) is an advanced engineering career pathway also referred to as Pathway To Engineering™. It is a national program that prepares students to be innovative and productive leaders in Science, Technology, Engineering, and Mathematics. PLTW's Pathway To Engineering™ program offers a dynamic high school program that provides students with real-world learning and hands-on experience. Students interested in engineering, biomechanics, aeronautics, and other applied math and science arenas may find that PLTW® is a portal into these industries. The program is a four-year course of study that is integrated into a high school student's core curriculum. The combination of traditional math and science courses with PLTW courses prepares students for college majors in engineering and technology and offers them the opportunity to earn college credit while still in high school. PLTW courses employ a combination of activities-based, project-based, and problem-based learning. (Please see Tables 1 and 2.)

The PLTW Engineering Academy at Whitman offers six courses that fulfill the Pathway to Engineering requirements: (1) IED; (2) POE; (3) Digital Electronics (DE); (4) Civil Engineering & Architecture (CEA); (5) Aerospace Engineering and (6) the capstone course, Engineering Design and Development (EDD). Course descriptions can be found online at:

<http://apps.montgomeryschoolsmd.org/coursebulletin/CourseLists/Index/222>

The PLTW recommended coursework is listed at:

http://www.montgomeryschoolsmd.org/departments/cte/toolkit/ClusterInfo/Engineering/prog_pltw.pdf

This PLTW program offers 6 high school credits total, which may earn students up to 53 college credits each or 15 total transcribed credits. These courses are typically taken in the following sequence:

Table 1: PLTW Required Coursework

Grade	PLTW Courses
9	IED or POE
10	IED or POE
11	DE and/or CEA and/or Aerospace
12	EDD

For information concerning Whitman's Engineering Academy and PLTW program, please contact Whitman's Resource Teacher for Technology Education:

Rachel Stender (Rachel_A_Stender@mcpsmd.org).

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