



PLTW Engineering Course Descriptions

Introduction to Engineering Design (1 year- Dual Credit with Kirkwood Community College)

Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3D modeling software, and use an engineering notebook to document their work. This is a foundational class.

Principles of Engineering (1 year - Dual Credit with Kirkwood Community College)

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. This is a foundational class. Algebra 1 req.

Aerospace Engineering (1 year)

This course propels students' learning in the fundamentals of atmospheric and space flight. As they explore the physics of flight, students bring the concepts to life by designing an airfoil, propulsion system, and rockets. They learn basic orbital mechanics using industry-standard software. They also explore robot systems through projects such as remotely operated vehicles. This is a specialty class.

Civil Engineering and Architecture (1 year - Dual Credit with Kirkwood Community College)

Students learn important aspects of building and site design and development. They apply math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3D architecture design software. This is a specialty class

Computer Integrated Manufacturing (1 year- Dual Credit with Kirkwood Community College)

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. Students can earn a virtual manufacturing badge recognized by the National Manufacturing Badge system. This is a specialty class.

Computer Science Principles (1 year - Dual Credit with Kirkwood Community College)

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. While this course can be a student's first in computer science, students without prior computing experience are encouraged to start with Introduction to Computer Science. 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. PLTW is recognized by the College Board as an endorsed provider of curriculum and professional development for AP® Computer Science Principles (AP CSP). This endorsement affirms that all components of PLTW CSP's offerings are aligned to the AP Curriculum Framework standards and the AP CSP assessment. AP score of 5 qualifies for University of Iowa Credit. See UI College Board Website for more details.

The Project Lead The Way (PLTW) engineering program offers students an array of advantages, from career readiness and hands-on experience to college preparatory-level classes, labs, and creative exercises. PLTW students succeed in the classroom and in life.

PLTW classes are hands-on, based in real-world experience, and fun for students and teachers. We set the highest standards for rigorous, focused, and engaging study, and develop students' innovative, collaborative, cooperative, and problem-solving skills.

Research indicates:

PLTW students achieve significantly higher scores in reading, mathematics, and science.

PLTW graduates earn higher GPAs as college freshmen.

PLTW graduates are 5 to 10 times more likely to study engineering and technology.

University College Credit - 4 Year

Many colleges in the country offer 4 year college credit for PLTW classes based on passing the end of course assessment given by PLTW. There usually is a fee for getting the credit on a transcript. See various colleges here:

<https://www.pltw.org/our-partners/college-and-university-partners>