



PROJECT LEAD THE WAY

PLTW

PLTW Gateway - Curriculum

DEVELOP AND ENCOURAGE STUDENTS' CONTINUED EXCITEMENT
IN STEM

Through topics like coding and robotics, flight and space, and DNA and crime scene analysis, middle school students engage their natural curiosity and imagination in creative problem solving. PLTW Gateway is a strong foundation for further STEM learning in high school and beyond, challenging students to solve real-world challenges, such as cleaning oil spills and designing sustainable housing solutions. Using the same advanced software and tools as those used by the world's leading companies, students learn how to apply math, science, technology, and engineering to their everyday lives.

PLTW Gateway is divided into independent units, assuming a 45-minute class period. PLTW Gateway is designed to be taught in conjunction with a rigorous academic curriculum. Schools that offer the program implement both foundation units and may add any combination of the specialization units.

Foundation Units

Design & Modeling

Students apply the design process to solve problems and understand the influence of creativity and innovation in their lives. They work in teams to design a playground and furniture, capturing research and ideas in their engineering notebooks. Using Autodesk® design software, students create a virtual image of their designs and produce a portfolio to showcase their innovative solutions.

Automation & Robotics

Students trace the history, development, and influence of automation and robotics as they learn about mechanical systems, energy transfer, machine automation, and computer control systems. Students use the VEX Robotics® platform to design, build, and program real-world objects such as traffic lights, toll booths, and robotic arms.

Specialization Units

App Creators

This unit will expose students to computer science by computationally analyzing and developing solutions to authentic problems through mobile app development, and will convey the positive impact of the application of computer science to other disciplines and to society.

Students will customize their experience by choosing a problem that interests them from the areas of health, environment, emergency preparedness, education, community service, and school culture. Because problems in the real world involve more than one discipline, the unit will introduce students to biomedical science concepts as they work on solutions for the specific problems they choose to tackle.

Computer Science for Innovators & Makers

This unit will allow students to discover computer science concepts and skills by creating personally relevant, tangible, and shareable projects. Throughout the unit, students will learn about programming for the physical world by blending hardware design and software development. They will design and develop a physical computing device, interactive art installation, or wearable, and plan and develop code for microcontrollers that bring their physical designs to life.

Physical computing projects will promote student awareness of interactive systems, including Internet of Things (IoT) devices, and broaden their understanding of abstract computer science concepts through meaningful and authentic applications.

Green Architecture

Today's students have grown up in an age of "green" choices. In this unit, students learn how to apply this concept to the fields of architecture and construction by exploring dimensioning, measuring, and architectural sustainability as they design affordable housing units using Autodesk's® 3D architectural design software.

Medical Detectives

Students play the role of real-life medical detectives as they analyze genetic testing results to diagnose disease and study DNA evidence found at a "crime scene." They solve medical mysteries through hands-on projects and labs, investigate how to measure and interpret vital signs, and learn how the systems of the human body work together to maintain health.