ENGINEERING – PLTW

Computer Science Essentials (CSE)
UC/CSU: d
Placement Guidelines: Grade 9 - 11

Computer Science Essentials is a yearlong course designed as an entry point for new high school computer science learners. Additionally, for students who have prior computer science experience, the course offers many opportunities for them to build upon their knowledge and skills. All students who take Computer Science Essentials will have many opportunities for creative expression and exploration in topics of personal interest, whether it be through app development, web design, or connecting computing with the physical world.

Introduction to Design
UC/CSU: f
Placement Guidelines: Grade 9 - 12

The major focus of the course is to introduce students to the design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. Introduction to Design gives students the opportunity to develop skills and understanding of course concepts through activity-, project-, and problem-based learning. Students will employ engineering and scientific concepts in the form of engineering design problems. In addition, students use a 3D solid modeling design software package to help them design solutions to solve proposed problems. Introduction to Design is for students interested in biomechanics, aeronautics, and other applied math and science arenas.

Introduction to Engineering Design (IED)
UC/CSU: d
Placement Guidelines: Grade 9 - 12

This course will exposure students to design and engineering. The major focus of the IED course is to introduce students to design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. IED gives students the opportunity to develop skills and understanding of course concepts through activity-, project-, and problem-based learning. Students will employ engineering and scientific concepts in the solution of engineering design problems. In addition, students use a 3D solid modeling design software package to help them design solutions to solve proposed problems. Engineering is for students interested in biomechanics, aeronautics, and other applied math and science arenas.

Principles of Engineering (POE)
UC/CSU: d
Placement Guidelines: Grade 9 - 12

Principles of Engineering is a course that helps students understand the fields of engineering and engineering technology. Exploring various technology systems and manufacturing processes help students learn how engineers and technicians use math, science, and technology in an engineering problem solving process to benefit people. The course also includes concerns about social and political consequences of technological change.

ENGINEERING – PLTW

Civil Engineering and Architecture (CEA)
UC/CSU: d
Placement Guidelines: Grades 10 - 12

Civil Engineering and Architecture (CEA) is the study of the design and construction of residential and commercial building projects. This course includes an introduction to many of the varied factors involved in building design and construction including building components and systems, structural design, storm water management, site design, utilities and services, cost estimation, energy efficiency, and careers in the design and construction industry.

Engineering Design and Development (EDD)
UC/CSU: d
Placement Guidelines: Grades 11 - 12

The knowledge and skills students acquire throughout Project Lead the Way (PLTW) Engineering come together in Engineering Design and Development (EDD) as they identify an issue and then research, design, and test a solution, ultimately presenting their solution to a panel of engineers. Students apply the professional skills they have developed to document a design process to standards, completing EDD ready to take on any post-secondary program or career. Engineering Design and Development 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. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

COMPUTER SCIENCE

Computer Science Essentials (CSE)
UC/CSU: d
Placement Guidelines: Grade 9 - 11

Computer Science Essentials is a yearlong course designed as an entry point for new high school computer science learners. Additionally, for students who have prior computer science experience, the course offers many opportunities for them to build upon their knowledge and skills. All students who take Computer Science Essentials will have many opportunities for creative expression and exploration in topics of personal interest, whether it be through app development, web design, or connecting computing with the physical world.

Advanced Placement Computer Science Principles (CSP)
UC/CSU: d
Placement Guidelines: Grades 10 - 12

AP Computer Science Principles introduces students to the central ideas of computer science, instilling the ideas and practices of computational thinking and inviting students to understand how computing changes the world. The rigorous course promotes deep learning of computational content, develops computational thinking skills, and engages
students in the creative aspects of the field. The course is unique in its focus on fostering students to be creative.
The AP Computer Science Principles course is designed to be equivalent to a first-semester introductory college computing course. Students will learn computer programming in multiple programming languages and apply these skills
to the construction of computer applications to solve problems in a project-based setting.

AP CSA builds on the basic skills learned in AP Computer Science Principles (AP CSP) to teach AP Computer Science Principles introduces students to the central ideas of computer science, instilling the ideas and practices of computational thinking and inviting students to understand how computing changes the world. The rigorous course promotes deep learning of computational content, develops computational thinking skills, and engages students in the creative aspects of the field. The course is unique in its focus on fostering students to be creative.

Advanced Placement Computer Science Applications (CSA)
UC/CSU: c
Placement Guidelines: Grades 11 - 12

AP CSA builds on the basic skills learned in AP Computer Science Principles (AP CSP) to teach students Java and authentic Android app development. Students in this course continue to hone their communication and collaboration skills while learning to use a variety of tools. The primary goal of the course is to create independent-thinking app developers: every unit in this course builds on students' prior knowledge and skills until they can complete an app development cycle independently from the ground up.