PLTW Computer Science

Computer Science Essentials

Prerequisites: Fundamentals of Computing or similar course

Computer Science Essentials (CSE) will expose students to a diverse set of computational thinking concepts, fundamentals, and tools, allowing them to gain understanding and build confidence. Students will use visual, block-based programming and seamlessly transition to text-based programming with languages such as Python to create apps and develop websites, and learn how to make computers work together to put their design into practice. They will apply computational thinking practices, build their vocabulary, and collaborate just as computing professionals do to create products that address topics and problems important to them Computer Science Essentials helps students create a strong foundation to advance to Computer Science Principles, Computer Science A, and beyond. At the end of this course, students will take an end of course assessment. Students who score a 6 on this exam will receive dual credit course weighting.

Computer Science Principles

Prerequisites: Students must have passed Computer Science Essentials and have been accepted into the Computer Science Major.

In addition to exploring possible careers in Computer Science, students use programming tools such as Python® to create apps and game simulations. This course is endorsed by the College Board, and students may take the AP Computer Science Principles exam for the opportunity to earn college credit. At the end of this course, students will take an end of course assessment. Students who score a 6 on this exam will receive dual credit course weighting.

Cybersecurity

Prerequisites: Must have passed all previous courses

This course provides students with a broad exposure to the many aspects of digital and information security, while encouraging socially responsible choices and ethical behavior. It inspires algorithmic and computational thinking, especially "outside-the-box" thinking. Students explore the many educational and career paths available to cybersecurity experts, as well as other careers that comprise the field of information security. Cybersecurity is designed with strong connections to the National Cybersecurity Workforce Framework (also known as the NICE Framework or NCWF). Created by the National Institute of Standards and Technology (NIST), this framework identifies standards that have been developed by numerous academic, industry, and government organizations. The objectives also incorporate many of the big ideas and learning objectives outlined by the College Board and addressed in AP CSP and AP CSA. In addition, the course integrates Computer Science Teachers Association (CSTA) standards. Whether seeking a career in the field of cybersecurity or learning to defend their own personal data, students enrolled in this course establish an ethical code of conduct while learning to defend data in today's complex cyber world. At the end of this course, students will take an end of course assessment. Students who score a 6 on this exam will receive dual credit course weighting.

Computer Science A

Prerequisites: Must have passed all previous courses

CSA focuses on integrating technologies across multiple platforms and networks, including the Internet. Students collaborate to produce programs that integrate mobile devices and leverage those devices for distributed collection and data processing. Students analyze, adapt, and improve each other's programs while working primarily in Java™ and other industry-standard tools. This course prepares students for the AP Computer Science-A course.