Watch this [video] to learn more about Computer Science

Computer Science

Offered to Grades:				Course
9	10	11	12	Applied Robotics Technology
9	10	11	12	Computer Technology - Hardware
9	10	11	12	Computer Technology - Operating Systems
9	10	11	12	Mobile App Design 1
9	10	11	12	Mobile App Design 2
9	10	11	12	Python 1 Honors
9	10	11	12	Python 2 Honors
9	10	11	12	Topics in Computer Science
9	10	11	12	Video Game Design 1
9	10	11	12	Video Game Design 2
9	10	11	12	Web Design
	10	11	12	Advanced Placement Computer Science Principles
	10	11	12	Advanced Placement Computer Science A

H = Courses marked with this symbol satisfy a Humanities elective

= Courses marked with this symbol satisfy a STEM elective

APPLIED ROBOTICS TECHNOLOGY
6702
0.5 credit
1ˢᵗ or 2ⁿᵈ Semester

See Technology Education section of the Program of Studies for course description and prerequisites.

COMPUTER TECHNOLOGY - HARDWARE
6774
0.5 credit
1ˢᵗ Semester

In this hands-on course students build and repair computers utilizing modern concepts in PC architecture. Students will research, design, and implement computer and networking systems, learning the latest PC hardware and software technologies.
No prerequisite

COMPUTER TECHNOLOGY – OPERATING SYSTEMS
6775
0.5 credit
2ⁿᵈ Semester

This course provides students the basic skills they need to solve computer related problems. Students will use logic and hands-on activities to explore all aspects of computer technology such as computer architecture, file management, numeric systems, networking, and cyber security.
No prerequisite

MOBILE APP DESIGN 1
6146
0.5 credit
1ˢᵗ Semester

Mobile APPs are here to stay. In this course students will build mobile applications for Android tablets and phones, using MIT's App Inventor software. Participants will learn basic Computer Science concepts while developing mobile applications in a user-friendly programming environment. No previous computer science or programming experience is necessary to succeed.
No prerequisite.
   NOTE: Students may be required to showcase their work outside of the classroom setting and/or the normal school day. If this is the case, advance notice will be given.

MOBILE APP DESIGN 2   **0.5 credit**
6147   **2ⁿᵈ Semester**

All Computer Science concepts and programming learned in Mobile App Design 1 are highlighted, developed and built upon in this course. Students continue to build mobile applications for Android tablets and phones, using MIT's App Inventor software. Additionally, students are challenged to synthesize their classroom learning with the world in which we live, and demonstrate their ability to apply key knowledge and skills by designing and developing individual mobile apps.
Prerequisite: *Mobile App Design 1* or *written permission from the advisor*
   NOTE: Students may be required to showcase their work outside of the classroom setting and/or the normal school day. If this is the case, advance notice will be given.

PYTHON 1   **0.5 credit**
6411 Honors   **1ˢᵗ or 2ⁿᵈ Semester**

This course is designed to develop structured programming skills in Python. Learning to program offers the student an invaluable opportunity to develop problem solving skills. The process of defining a problem, breaking it down into a series of smaller problems and finally writing a computer program to solve it, is an exercise in learning to think logically. Topics will include: Python program structure, using variables, controlling program flow (loops), functions and arrays.
No prerequisite

PYTHON 2   **0.5 credit**
6412 Honors   **2ⁿᵈ Semester**

This course is a continuation of Python 1. Programming skills will be used to solve problems and projects drawn from mathematics, business and student interests. The course will involve advanced application of skills learned in Python 1 as well as new material covering classes and objects, streams and files, sorting, graphics and data structures.
Prerequisite: *Python 1*

TOPICS IN COMPUTER SCIENCE   **0.5 credit**
 6413   **1ˢᵗ or 2ⁿᵈ Semester**

This course is open to all students with any or no CS experience and is designed as an introduction to topics in Computer Science. Students will survey a variety of subjects such as: Data & Society, Physical Devices in Computing, AI & Machine Learning, CyberSecurity and more. To allow for students of all abilities (novice to expert), the course will allow participants to select and explore an area of personal interest and implement the design process to showcase their learning.
No prerequisite

VIDEO GAME DESIGN 1   **0.5 credit**
6144   **1ˢᵗ or 2ⁿᵈ Semester**

Students will learn the principles of video game design and explore how to market video games through a study of the business side of the industry. Students will learn how video game companies have been successful over time, the factors leading to their success, and the future of this growing industry. Students will be working collaboratively to design video games of their own and test the usability and marketability across an audience of consumers.
No prerequisite

VIDEO GAME DESIGN 2   0.5 credit
6145   1st or 2nd Semester

Students will further their design skills learned in Video Game Design 1, and extend their knowledge and technology skills to convey ideas through sound, music, animation, and computer graphics. Students will use innovation to design a game for a given need, or "customer".
Prerequisite: *Video Game Design 1 or permission from the instructor with demonstration of prior knowledge.*

WEB DESIGN   0.5 credit
6191   1st or 2nd Semester

With the ever-growing influence of the Internet, students need to prepare themselves for a web-based future. Through this course, students learn how to design, create, and manipulate web sites for personal and professional applications. In addition to basic HTML code, this course will include site design and management using Adobe Dreamweaver.
No prerequisite

ADVANCED PLACEMENT COMPUTER SCIENCE A   1 credit
3273   **Full year**

See [Mathematics](#) section of the Program of Studies for course description and prerequisites.

ADVANCED PLACEMENT COMPUTER SCIENCE PRINCIPLES   1 credit
6653   **Full Year**

> **Important note: To be successful in these college level courses, excellent skills and a strong work ethic are essential. Students are expected to take the appropriate Advanced Placement Examination in May, at the student's expense.**

This rigorous course is designed for any motivated student, despite one's prior experience with computer science. It is intended to increase students' understanding of the central ideas of computer science (the study of computers and computation). Computer Science Principles is designed to provide a solid introduction to the thinking skills and practices that make up the study of computer science and an appreciation of the role that computers and computation play in the 21st century. There are seven basic principles that are the basis for this course: (1) creativity, (2) abstraction, (3) data, (4) algorithms, (5) programming, (6) the Internet, and (7) societal impact. The course is project-based, and it is designed to help students learn to access mobile services and applications as creators, not just consumers. Students will use multiple tools and devices such as Android phones and/or Android Emulators, and App Inventor to design and create Android apps. **This course differs from AP Computer Science A (which focuses on Java) in that it focuses on the fundamentals of computing, problem solving, large scale data and cyber security through the development of mobile applications.** *(source: Conard High School)*
No prerequisite

[Click here](#) to learn more about the differences between AP Computer Science A and AP Computer Science Principles.