

# COMPUTER SCIENCE

The most important aspect of computer science is problem solving--an essential skill for life. Students study the design, development and analysis of software and hardware used to solve problems in a variety of business, scientific and social contexts. This is a three course sequence culminating with AP Computer Science.

## **INTRO COMPUTER SCIENCE (Honors)**

0.5 credit/4.5 weight

Intro to Computer Science is designed to introduce students to the central ideas of computing and computer science (CS), to instill ideas and practices of computational thinking, and to have students engage in activities that show how computing and computer science can change the world. The CS course is rigorous and rich in computational content, includes computational and critical thinking skills, and engages students in the creative aspects of CS. Through both its content and pedagogy, this course aims to appeal to a broad audience.

CS uses the mobile computing language, App Inventor for Android, to provide a rigorous, programming-based introduction to the principles of computer science. Students learn computer science by building socially useful mobile apps. In addition to programming and computer science principles, the course is project-based and emphasizes writing, communication, collaboration, and creativity.

## **PRINCIPLES OF COMPUTER SCIENCE - JAVA I (Honors)**

1 credit/4.5 weight

JAVA I is an advanced programming course for students who have successfully completed *Introduction to Computer Science*. This course is designed for those students who wish to prepare for AP Computer Science or prepare for taking computer science courses at the college level. This class focuses on problem solving and the science of designing computer programs using an object oriented style. The course covers topics such as ordering/sorting algorithms, infinite lists, list comprehension, function abstraction, and artificial

intelligence. The course will develop these skills using Java as a means for learning programming. The types of problems solved by means of programming will vary (ie. Math, Finance, Graphics). . (This course is offered in Fall semester of odd years only.)

## **COMPUTER SCIENCE (AP)**

1 credit/5.0 weight

*Prerequisite: Java I Must meet AP course requirements.*

AP Computer Science Principles offers a multidisciplinary approach to teaching the underlying principles of computation. The course will introduce students to creative aspects of programming, using abstractions and algorithms, working with large data sets, understandings of the Internet and issues of cybersecurity, and impacts of computing that affect different populations. AP Computer Science Principles will give students the opportunity to use current technologies to solve problems and create meaningful computational artifacts. Together, these aspects of the course make up a rigorous and rich curriculum that aims to broaden participation in computer science.

AP Computer Science Principles will encourage students to be both analytical and creative in their thinking, and to collaborate with their peers to investigate solutions to real-world issues using computing. Students who succeed in AP Computer Science Principles will be better prepared in college and career, with a thorough grasp of computing foundations and concepts. Students are required to take the AP College Board Computer Science A exam in May. (This course is offered in Spring semester of even years only.)