

COMPUTER COURSES

Computer programming courses may satisfy up to one of the three mathematics credits required for graduation.

ACCELERATED COMPUTER SCIENCE 1 (S) (AD)

GRADES 9-12

This course is open to all high school students who are at least taking Accelerated Algebra I and are interested in the study of computer programming. This entry-level course is taught using the C# (pronounced “see sharp”) language, within the Microsoft Visual Studio .NET environment and will focus on the development of fundamental programming skills. The topics in this course of study include a review of the .NET Integrated Development Environment, basic structure and syntax of the C# language, an introduction to object-oriented design using classes and objects, decision making statements, iteration structures (loops), arrays, and string manipulation. The history of computers and programming will also briefly be discussed. Upon completion of Computer Science 1 with at least a “C”, students are encouraged to move on to Computer Science 2.

ACCELERATED COMPUTER SCIENCE 2 (S) (AD)

GRADES 9-12

This course is open to all high school students who are at least taking Accelerated Algebra 2 and have successfully completed Computer Science 2. Students will learn the fundamental skills that are required to design and develop object-oriented applications for the Web and Microsoft Windows. This course is taught using the C# language and will serve as an extension to the concepts introduced in Computer Science 1. Additional topics in the course of study include file handling and database manipulation, methods, enumerations and structures, and an introduction to windows forms and painting. The course will be highly project based and geared towards real-world applications using a variety of hands-on lab exercises, case studies, and team learning tasks. It is highly recommended that students take Computer Science 2 before taking Advanced Placement Computer Science.

ADVANCED PLACEMENT COMPUTER SCIENCE PRINCIPLES (YR)

GRADES 10-12

AP Computer Science Principles offers a multidisciplinary approach to teaching the underlying principles of computation. It is open to students who have completed Algebra 2 with a strong foundation in function notation and problem solving. The course will introduce students to the creative aspects of programming, abstractions, algorithms, large data sets, the Internet, cybersecurity concerns, and computing impacts. AP Computer Science Principles also gives students the opportunity to use current technologies to create innovative computational artifacts for both self-expression and problem solving. Students will develop these artifacts using the same creative processes artists, writers, computer scientists, and engineers use to bring ideas to life. It is expected that students will seek college credit by taking the Advanced Placement Computer Science Principles Examination in May.

ADVANCED PLACEMENT COMPUTER SCIENCE A (YR)

GRADES 11-12

This advanced course is provided as an introduction to college-level computer programming, using the Java language. It is open to students who have at least successfully completed Accelerated Algebra 2 and have a solid foundation in object-oriented computer programming concepts (i.e. C#, C++, Visual Basic, and Java). A fundamental skill to the study of computer science is to develop computer programs to solve problems. A large part of this course is built around the development of computer programs or parts of programs to solve a given problem using object-oriented designs. The topics in the course of study include the use of standard Java classes, objects, data types, methods, decision making statements, string handling, the application of data storage and data processing, and other algorithms. Students will also learn to create and manipulate applications, applets, and GUI components. The course will be highly project based and geared towards real-world applications using a variety of hands-on lab exercises, case studies, and team learning tasks. It is expected that students will seek college credit by taking the Advanced Placement Computer Science Examination (Level A) in May.

All students need to take three years of high school mathematics in grades 9-12 in order to graduate. A maximum of one credit may be taken outside of the Mathematics Department (from the following: Accelerated Computer Science 1, Accelerated Computer Science 2, Advanced Placement Computer Science A). Placement in the appropriate mathematics course is made on the basis of student success in prior mathematics courses, prognostic tests, and teacher recommendation. Although three credits of math are required for graduation, most colleges specify successful completion of a full year of Algebra 1, Algebra 2 and Geometry. Many colleges now require four years of high school math. Please note that many mathematics courses require that the student has a graphing calculator. We recommend the TI-83, TI-83 Plus, or TI-84 Plus. (The TI-85 does not have the needed statistical capabilities). Although other graphing calculators may suffice, all instruction will be done using the TI-83, TI-83 Plus, or TI-84 Plus.