

Math - Computer Electives

Math - Computer Electives Courses

AICE Computing (AS Level)

AICE Computing provides students with a thorough knowledge of computing and computer science. Following an international curriculum, students will learn the nature and principles of information processing and the broad range of its applications, together with an Advanced understanding of how information-processing systems are designed to suit applications. They will develop their ability to use computing techniques to solve problems through structured, practical experiences. This course prepares students for an Advanced International Certificate of Education Diploma and the Computer Science A qualification.

Credits 1

Grades

11, 12

Course Designation

Advanced Subsidiary Level (AS),

Weighted (1.0W)

Schools

Currently Unavailable

Requirements

Teacher recommendation

Prerequisites

[AP Computer Science A](#)

[Algebra 2](#)

Advanced Computer Mathematics

Advanced Computer Mathematics has a focus to provide the student with a conceptual background in computer science. Topics include computer architecture, data representation, operating systems, computing systems in society, and software development. Students will implement the major stages of software development using a high-level language. Topics will include loops, selections, and arrays. This Advanced course covers all topics in the regular Computer Mathematics class as well as others. In some schools this course is the first year of a three-year curriculum in Computer Science.

Credits 1

Grades

9, 10, 11, 12

Course Designation

Weighted (0.5W)

Schools

Battlefield High School

Forest Park High School

Gar-Field High School

Patriot High School

Potomac High School

Woodbridge High School

Prerequisites

[Algebra 1](#)

Notes

Advanced Computer Math may count as the third math course for graduation in addition to Algebra and Geometry, only if the student also completes a career and technical concentration.

Advanced Computer Studies

This course is an introduction to high performance computational concepts utilizing telecommunication and informational technologies. This course will provide mechanisms for learner-centered, collaborative environments where the students and teacher will engage in dynamic modeling processes in a variety of areas ranging from the sciences to the humanities. The course emphasizes real-world problems, hands-on activities, and discovery learning that will facilitate an environment for constructive learning. The students will be expected to complete a year-long research project.

Credits 1

Grades

11, 12

Course Designation

Weighted (1.0W)

Schools

Battlefield High School

Forest Park High School

Prerequisites

Completed **or** concurrently enrolled in [AP Computer Science A](#)

Data Structures and Algorithms

The course extends the topics of AP Computer Science A and provides a more formal and more in-depth study of algorithms, data structures, and data abstraction. Binary trees, recursive data structures and dynamically allocated structures are fundamental to the course.

Credits 1

Grades

11, 12

Course Designation

Weighted (1.0W)

Schools

Battlefield High School

Forest Park High School

Prerequisites

[Algebra 2](#)

[AP Computer Science A](#)

IB Computer Science (HL)

IB Computer Science HL continues with the topics developed in IB CS SL with the additional topics of computer mathematics and logic, abstract data structures and algorithms, further system fundamentals, and file organization. IB Computer Science HL is the third year of a three-year curriculum in Computer Science. Students will implement the major stages of software development using a high-level language. Topics will include lists and iterators, stacks and queues, recursion, binary trees, lookup tables and hashing, priority queues, and analysis of algorithms. Student will develop a major software project from requirement specification to test and take the IB Computer Science HL Exam.

Credits 1

Grades

12

Course Designation

Higher Level (HL) ,

Weighted (1.0W),

International Baccalaureate (IB)

Schools

Gar-Field High School

Prerequisites

[IB Computer Science \(SL\)](#) **or** teacher recommendation

IB Computer Science (SL)

IB Computer Science SL continues with the topics developed in Advanced Computer Math such as computer architecture, data representation, operating systems, computing systems in society, and software development. IB CS SL is the second year of a three-year curriculum in Computer Science. Students will implement the major stages of software development using a high-level language. Topics will include sorting and searching algorithms, and files. The students will develop a major software project by developing the requirements specification, design documentation, pseudo code, testing documentation and the user documentation.

Credits 1

Grades

11, 12

Course Designation

Standard Level (SL),

Weighted (1.0W),

International Baccalaureate (IB)

Schools

Gar-Field High School

Prerequisites

[Advanced Computer Mathematics](#) **or** teacher recommendation