

Computer science is the foundation of technology. With College Board's Advanced Placement (AP) frameworks and curriculum, students will develop critical problem-solving skills and learn essential programming languages to help prepare them for the future.

#### **Is Computer Science for You?**

Are you creative?

Do you like to solve problems?

Are you interested in making computers do things for you?

Ever thought of an idea for a great app or video game?

Want to design a cool robot?

#### **Career Opportunities**

The Computer Science program will help prepare students for the following Information Technology or Computer Science careers.

Software Applications Developer, Computer Programmer  
Gaming/App Developer  
Computer Systems Analyst  
Computer Hardware or Systems Engineer  
Computer Systems Analyst, Business Systems Analyst  
Network Systems Administrator  
Computer Network Architect, Information Systems Manager  
Database Administrator

The Computer Science program of study prepares students for further study and careers in the field of Computer Science. This program helps to develop a student's computational and critical thinking skills and prepare them to create new technologies. This fundamental knowledge in Computer Science prepares them for the 21st century workplace, regardless of their ultimate field of study or occupation. Some of the topics that may be included in Computer Science courses are algorithms, data analysis, modeling, problem-solving, coding or programming (including application or game design), human-computer interaction, and ethical issues.

***The four courses offered*** are designed to give a thorough background in many aspects of Computer Science and blend academic, technical and workplace skills to prepare students for college and a career. **Students have the potential to earn college credits with two Advanced Placement courses.**

# COURSES OFFERED AT WEST POTOMAC

**INTRODUCTION TO COMPUTER SCIENCE** The introduction to computer science curriculum teaches the foundations of computer science and basic programming, with an emphasis on helping students develop logical thinking and problem-solving skills. Once students complete the Introduction to Computer Science course, they will have learned material equivalent to a semester college introductory course in Computer Science and be able to program in *Java*.

**Grade Levels:** 9th, 10th, 11th, 12th **Prerequisite:** None

**AP COMPUTER SCIENCE PRINCIPLES:** AP Computer Science Principles introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. No specific programming language taught. With a unique focus on creative problem solving/real-world applications and how to design programs, AP Computer Science Principles prepares students for college and career. AP Exam: Digital Portfolio.

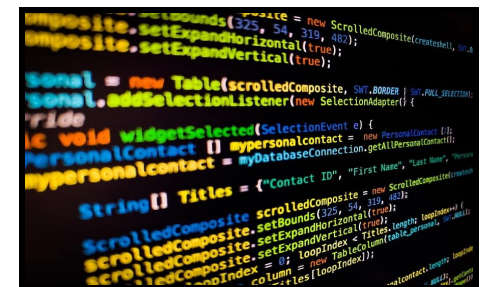
**Grade Levels:** 10th, 11th, 12th **Prerequisite:** Algebra I

**AP COMPUTER SCIENCE-A :** Learn the basics of object-oriented programming with a focus on problem solving and algorithm development. *Programming language: Java.* Take this course and prepare for the AP® Computer Science-A test to earn college credit.

**Grade Levels:** 10th, 11th, 12th **Prerequisite:** Geometry

**ADVANCED COMPUTER SCIENCE AB (DATA STRUCTURES):** This course is a standard second-semester college course on algorithms and data structures in an object-oriented environment. The sorting algorithms include selection, insertion, merge, quick, and heap. The data structures include arrays, recursion, linked lists, stacks, queues, trees, sets, maps, and graphs. Additional topics may include the Java Collections framework, Big-O analysis, and class design. It includes college material going well beyond the topics tested by the College Board's AP Computer Science A exam. *The programming language is Java.*

**Grade Levels:** 11th, 12th **Prerequisite:** Geometry, AP Computer Science-A



# DESIGN YOUR COMPUTER SCIENCE PATHWAY:

## Students can take 1, 2, 3, or 4 years of Computer Science

The only course that is sequential is Advanced Computer Science AB (*APCS-A prerequisite*). The other 3 courses may be taken by themselves without taking the other courses.

1-YEAR PROGRAM			
Intro to CS			
AP Computer Science-A			
AP Computer Science Principles			
2-YEAR PROGRAM			
Intro to CS	AP Computer Science Principles		
Intro to CS	AP Computer Science-A		
AP Computer Science-A	Advanced Computer Science AB		
AP Computer Science Principles	AP Computer Science-A		
3-YEAR PROGRAM			
Intro to CS	AP Computer Science Principles	AP Computer Science-A	
AP Computer Science Principles	AP Computer Science-A	Advanced Computer Science AB	
4-YEAR PROGRAM			
Intro to CS	AP Computer Science Principles	AP Computer Science-A	Advanced Computer Science AB

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