

**Curriculum at a Glance**  
**Technology, Engineering, STEM, Business and Computers**  
**Advanced Placement Computer Science**

Description: The AP Computer Science course introduces students to computer science through topics including problem solving, design strategies and methodologies, data structures, data processing algorithms, analysis of solutions and the ethical and social implications of computing. Student will prepare to take the AP Computer Science A test in the spring.

Unit Name/Description	Content and/or Skills
<ul style="list-style-type: none"> <li>● Syntax, objects, classes and class hierarchies</li> </ul>	<ul style="list-style-type: none"> <li>● Acquire skills in designing object-oriented software solutions to problems from various application areas</li> <li>● Understand and apply the main principles of object-oriented software design and programming: classes and objects, constructors, methods, instance and static variables, inheritance, class hierarchies, and polymorphism</li> </ul>
<ul style="list-style-type: none"> <li>● Arithmetic, logic, and control statements</li> </ul>	<ul style="list-style-type: none"> <li>● Learn to code fluently in Java in a well-structured fashion and in good style; learn to pay attention to code clarity and documentation</li> <li>● Learn to select appropriate algorithms and data structures to solve a given problem</li> </ul>
<ul style="list-style-type: none"> <li>● Strings, arrays and ArrayLists</li> </ul>	<ul style="list-style-type: none"> <li>● Understand one- and two-dimensional arrays, the List interface, and the ArrayList class, and use them appropriately in programming projects</li> </ul>
<ul style="list-style-type: none"> <li>● Recursion, searching and sorting</li> </ul>	<ul style="list-style-type: none"> <li>● Understand the concept of an algorithm; implement algorithms in Java using conditional and iterative control structures and recursion</li> <li>● Learn common searching and sorting algorithms: Sequential Search and Binary Search; Selection Sort, Insertion Sort, and Mergesort</li> </ul>
<ul style="list-style-type: none"> <li>● AP Exam Review &amp; Practice</li> </ul>	<ul style="list-style-type: none"> <li>● Learn to use Java library packages and classes within the scope of the AP Java subset</li> <li>● Compare efficiency of alternative solutions to a given problem</li> </ul>
<ul style="list-style-type: none"> <li>● Computers &amp; software engineering</li> </ul>	<ul style="list-style-type: none"> <li>● Discuss ethical and social issues related to the use of computers</li> <li>● Extension activities</li> </ul>