

ADVANCED PLACEMENT COMPUTER SCIENCE  
GRADES 11-12

(2 Semesters – Prerequisite: Advanced Algebra, Introduction to JAVA Programming recommended)

COURSE OVERVIEW:

Advanced Placement Computer Science is a course designed to prepare the student for the Advanced Placement Test in Computer Science. It includes the following topics: problem solving methodology, algorithm design and analysis, programming, data structures, applications, computer organizations and systems, and the social implications of computers.

UNITS OF INSTRUCTION:

- UNIT I - Computer Science, Computer Architecture and Computer Languages
- UNIT II - Introduction to Objects, Applets, Graphics, and Primitive Data Types
- UNIT III - Program Development, Conditional Statements, and Loops
- UNIT IV - Writing Classes, Methods, and Applet Methods
- UNIT V - Interfaces, Designing Classes, and Graphical User Interfaces
- UNIT VI - Arrays, Searching, Sorting, and Array List Class
- UNIT VII - Inheritance, Polymorphism, and Class Hierarchies
- UNIT VIII - Recursion
- UNIT IX - Data Structures, Stacks, and Queues
- UNIT X - Sets, Maps, Trees, and Heaps

COURSE OUTCOMES:

1. Design and implement computer-based solutions to problems in several application areas.
2. Learn well-known algorithms and data structures.
3. Develop and select appropriate algorithms and data structures to solve problems.
4. Code in a well-structured fashion using Java.
5. Read and understand a large program and a description of the design and development process leading to such a program.
6. Identify the major hardware and software components of a computer system.

LEARNING EXPERIENCES TO ACHIEVE OUTCOMES:

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| <ol style="list-style-type: none"><li>1.</li><li>2.</li></ol> | <p>Students will be expected to spend a minimum of three hours per week alone on a computer.</p> <p>Students will write a minimum of 15 programs a semester of varying lengths and levels of complexity.</p> |
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ADOPTED TEXT OR PRINCIPAL MATERIALS USED:

Lewis, et al. <i>Java Software Solutions</i> . Pearson Education, 2004.	(adopted 2003)
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(03/25/04)

(06/28/99)

(05/08/95)