

APCS (AP Computer Science) COURSE DESCRIPTION



This AP Computer Science course covers the College Board APCS Exam curriculum including integral concepts such as sorting algorithms, ArrayLists, recursion and inheritance. This course will successfully prepare students for the APCS Exam offered in May.

Whether you are getting ahead of the high school curriculum, aiming for better grades, or preparing for the AP Computer Science exam, this class will give you the solid foundation needed to succeed. Fundamental and important concepts will be taught in great detail leaving students with a deeper understanding of the concepts. This course is designed for ninth grade and up in order to equip students with the Java skills necessary to excel in both the AP Computer Science high school course as well as the College Board exam.

Homework/Assignments: Exercises from CodingBat.com will be assigned.

Tests: APCS Practice Exams and CodingBat exercises will be graded throughout the course

Lesson 1 - Java Syntax

Packages and Classes
Pseudo code and Javadoc Comments
Types and Identifiers
Storage of Numbers
Assignment: CodingBat - Warmup1

Lesson 2 - Operators

Arithmetic Operators
Relational and Logical Operators
Assignment, Increment, and Decrement Operators
Assignment: CodingBat - Logic1

Lesson 3 - Java Language Concepts

Input/Output
Escape Sequences
Decision Making Structures
Errors and Exceptions
Assignment: CodingBat - Warmup2

Lesson 4 - Classes, Objects and Methods

Classes/Objects
Methods
Assignment: Reverse.java

Lesson 5 - Inheritance and Polymorphism Pt 1

Implementing Subclasses
Declaring Subclass Objects
Dynamic Binding
Assignment: Elevens Lab Pt 1

Lesson 6 - Inheritance and Polymorphism Pt 2

Type Compatibility
Abstract Classes
Interfaces
Assignment: Elevens Lab Pt 2

Lesson 7 - Standard Classes Pt 1

The Object Class
The String Class
Assignment: CodingBat - Strings1

Lesson 8 - Standard Classes Pt 2

Wrapper Classes
The Math Class
Assignment: CodingBat - Strings2

Lesson 9 - Program Design and Analysis

Computer Science Vocabulary
Assignment: Barron's APCS Multiple Choice

Lesson 10 - Arrays and ArrayLists

1D and 2D Arrays
ArrayLists
The List<E> Interface
Assignment: CodingBat - Arrays2

Lesson 11 - Recursion

Recursive Methods
Recursion in 2D Grids
Assignment: CodingBat - Recursion1

Lesson 12 - Sorting and Searching

Selection Sort
Insertion Sort
Merge Sort
Quick Sort
Sequential Search vs. Binary Search
Assignment: CodingBat - Map1

Lesson 13 - 17 - APCS Practice Exams

Barron's APCS Exam
Be Prepared for the APCS Exam in Java Test