

# 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