



Course Syllabus

AP Computer Science A | 2020-2021

Objectives:

- Introduce Object Oriented Programming (OOP) principals using the Java language.
- Prepare the student to successfully take the AP Computer Science A Exam.

Prerequisites: Prior programming is not required but will be helpful.

Instructor Contact Information:

Primary Instructor: Larry McMahan larry.mcmahan@fremontstem.com

Website:

All course materials (waiver, syllabi, etc.) will be posted on the course website under “AP Computer Science.” In addition, class materials and assignments will be posted in a Google classroom for the course (classroom.google.com).

Class Times:

Sundays 6:00 – 7:30 PM

Required Materials:

- Students are required to have a PC, Mac, or similar computer. Students are required to install the Java Development Kit from Oracle (free) and ensure that it works before the first class period.
- Links to PDFs and online resources will be provided in class.

Reference Material: Barron’s Computer Science A, Ninth Edition.

Homework: Homework that is assigned is strongly recommended. Answer keys will be available online the day the homework assignment is due. For help on practice problems, feel free to email the instructor. The AP Computer Science A Exam will be held on May 6, 2021. Practice tests will be given before the exam.

Tentative Nature of the Syllabus: The contents of this syllabus and attached schedule are tentative in nature and may be subject to change or revision. The instructor holds the right to make changes to the schedule and/or organization of the class as necessary. Students and parents will be identified of any changes via email.

Special Accommodations: If your student requires special accommodations, please notify the instructor as soon as possible.

Tentative Schedule

Date	Topic
Sep 13	1. Introduction - Computer Architecture and Organization, Object Oriented Programming
Sep 20 – Sep 27	2. Java Language Features – Types and Identifiers, Operators, Input/Output, Statements and Control Structures, Iterators
Oct 4 – Oct 18	3. Classes and Objects – Classes, Objects, Instantiation, Public/Private/Static Attributes, Methods, Scope of objects, References
Oct 25 – Nov 8	4. Inheritance and Polymorphism – Superclass and Subclass, Inheritance Hierarchy, Dynamic Binding, Method Names, Type Compatibility
Nov 15 – Dec 6	5. Standard Java Classes – Object Class, String Class, Wrapper Classes, Math Class
Dec 13 – Jan 10	6. Program Design and Analysis – Order of Program Design and Testing, Object Oriented Design Techniques, Program Analysis
Jan 17 – Jan 31	7. Arrays and Array Lists – One Dimensional Arrays, Array Lists, Two Dimensional Arrays
Feb 14 – Feb 28	8. Recursion – Recursive Methods, Simple Recursion, Types of Recursion, Sorting with Recursion, Recursion in Two Dimensional Grids.
Mar 7 – Mar 21	9. Sorting and Searching – Iterative Sorts: Selections and Insertions, Recursive Sorts: Merge Sort and Quicksort, Sequential Search, Binary Search.
Mar 28 – Apr 18	10. Labs – Magpie Lab Emphasis, Elevens Lab Emphasis, Picture Lab Emphasis
Apr 25 – May 2	11. Preparing for the AP Exam
May 9 – June 6	12. Advanced Topics – Lists, Queues, Stacks, Trees (will not be on exam)

**Note: Schedule is tentative in nature and subject to change at the instructor's discretion.*