

COURSE SYLLABUS

2020-2021

AP Computer Science Principles

INSTRUCTOR: Ms. Goode

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Course Overview

AP Computer Science Principles offers a multidisciplinary approach to teaching the underlying principles of computation. The course will introduce students to the creative aspects of programming, abstractions, algorithms, large data sets, the Internet, cybersecurity concerns, and computing impacts. AP Computer Science Principles also gives students the opportunity to use current technologies to create computational artifacts for both self-expression and problem solving. Together, these aspects of the course make up a rigorous and rich curriculum that aims to broaden participation in computer science.

The AP Computer Science Principles course is designed to be equivalent to a first- semester introductory college computing course. In this course, students will develop computational thinking skills vital for success across all disciplines, such as using computational tools to analyze and study data and working with large data sets to analyze, visualize, and draw conclusions from trends. The course engages students in the creative aspects of the field by allowing them to develop computational artifacts based on their interests. Students will also develop effective communication and collaboration skills by working individually and collaboratively to solve problems and will discuss and write about the impacts these solutions could have on their community, society, and the world.

PREREQUISITES It is recommended that a student in the AP Computer Science Principles course should have successfully completed a first-year high school algebra course with a strong foundation on basic linear functions and composition of functions, and problem-solving strategies that require multiple approaches and collaborative efforts. In addition, students should be able to use a Cartesian (x, y) coordinate system to represent points in a plane. It is important that students and their advisers understand that any significant computer science course builds upon a foundation of mathematical and computational reasoning that will be applied throughout the study of the course.

***Computer Language Unlike AP Computer Science A, which is taught in Java, the AP Computer Science Principles course does not have a designated programming language. Teachers select the programming language(s) that is most appropriate for their students. For our class we will be using *App Lab(java)* and *Code.org*.

Absences and Make-up: As an APCSP student it is expected for students to maintain exemplary attendance with minimal absences. Excessive absenteeism may result in removal from this course. As per school board policy, students will have the number of days they were absent to make up any missed work. Work from an excused absence, ISS and ABS receives full credit if turned in within the given time limit. Work from an unexcused absence or OSS must be dropped a full letter grade. Work not turned in on time will be reviewed, but must be given a grade of zero

Required Materials

- 2 Notebooks
- Ear pods or headphones
- Section in Binder for APCSP

Resources

College Board:

www.collegeboard.org

Code.org:

www.code.org

Albert.io:

<https://www.albert.io/>

Khan Academy:

<https://www.khanacademy.org/>

AP Computer Science Principles Course Content

The following are the major areas of study, or big ideas, that are foundational to studying computer science:

- **Big Idea 1 - Creativity:** Computing is a creative activity. Creativity and computing are prominent forces in innovation; the innovations enabled by computing have had and will continue to have far-reaching impact.
- **Big Idea 2 - Abstraction:** Abstraction reduces information and detail to facilitate focus on relevant concepts. It is a process, a strategy, and the result of reducing detail to focus on concepts relevant to understanding and solving problems.
- **Big Idea 3 - Data and Information:** Data and information facilitate the creation of knowledge. Computing enables and empowers new methods of information processing, driving monumental change across many disciplines — from art to business to science.
- **Big Idea 4 - Algorithms:** Algorithms are used to develop and express solutions to computational problems. Algorithms realized in software have affected the world in profound and lasting ways.
- **Big Idea 5 - Programming:** Programming enables problem solving, human expression, and creation of knowledge. Programming and the creation of software has changed our lives. It results in the creation of software, and facilitates the creation of computational artifacts, such as music, images, and visualizations.
- **Big Idea 6 - The Internet:** The Internet pervades modern computing. The Internet and the systems built on it have had a profound impact on society. Computer networks support communication and collaboration.
- **Big Idea 7 - Global Impact:** Computing has global impact. Our methods for communicating, collaborating, problem solving, and doing business have changed and are changing due to innovations enabled by computing

Course Outline

Semester #1

Code.org Unit #1 - Digital Information

Code.org Unit #2 - The Internet

Code.org Unit #3 - Intro to App Design

Code.org Unit #4 - Variables, Conditionals, and Functions

Code.org Unit #5 - Lists, Loops, and Traversals

Semester #2

Code.org Unit #6 - Algorithms

Code.org Unit #7 - Parameters, Return, and Libraries

Code.org Unit #8 - Create PT Prep *Written Responses*

Code.org Unit #9 - Data

Code.org Unit #10-Cyber Security and Global Impacts

CREATE TASK– DESIGNING YOUR APP

Grading

Course grades will consist of the following:

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|--|-----------|-------------|
| • Binder/Focused Notes (minimum 15%) | A: | 100% - 90% |
| • Code.org Lessons | B: | 89.9% - 80% |
| • Albert.io | C: | 79.9% - 70% |
| • Quizzes/Tests (College Board) | D: | 69.9% - 60% |
| • Projects (Create Tasks) THESE ARE MANDATORY!!!! | F: | Below 60% |
| • In Class Activities and Participation/Check ins | | |

PLEASE READ THOROUGHLY AND BE FAMILIAR WITH THE FOLLOWING EXPECTATIONS

- Per Board policy, students cannot exempt their S1 exam for an AP class. They must take the teacher created S1 exam (which could be created in AP Classroom).
- Per Board policy, students in an AP class must take the AP Exam. Students who take the AP Exam have an X entered for their S2 exam grade, while teachers are required to enter an F for the S2 exam grade when a student does not sit for the AP Exam.

Student Signature: _____ **Student Name:** _____

Parent Signature: _____ **Date:** _____