7600 AP Computer Science Principles Syllabus

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COURSE DESCRIPTION

AP Computer Science Principles is a full-year (2 semesters), introductory college-level computing course that introduces students to the breadth of the field of computer science. Students learn to design and evaluate solutions and to apply computer science to solve problems through the development of algorithms and programs. They incorporate abstraction into programs and use data to discover new knowledge. Students also explain how computing innovations and computing systems—including the internet—work, explore their potential impacts, and contribute to a computing culture that is collaborative and ethical.

PREREQUISITE

It is recommended that students in the AP Computer Science Principles course have successfully completed a first-year high school algebra course with a strong foundation of basic linear functions, 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 on a plane. It is important that students and their advisers understand that any significant computer science course builds upon a foundation of mathematical reasoning that should be acquired before attempting such a course. Prior computer science experience is not required to take this course.

TEXTBOOKS AND RESOURCES

www.code.org www.bjc.edc Google Classroom

REQUIRED MATERIALS

- 3-ring binder for handouts, notes, and assignments
- Google Drive account or USB flash drive
- Reliable access to a computer outside of class

OBJECTIVES

The course is organized around seven big ideas, which encompass ideas foundational to studying computer science.

- **Big Idea 1: Creativity**
- **Big Idea 2: Abstraction**
- **Big Idea 3: Data**
- **Big Idea 4: Algorithms**
- **Big Idea 5: Programming**
- **Big Idea 6: The Internet**
- **Big Idea 7: Global Impacts**

Six computational thinking practices capture important aspects of the work that computer scientists engage in.

- **P1: Connecting Computing**
- **P2: Creating Computational Artifacts**
- **P3: Abstracting**
- **P4: Analyzing Problems and Artifacts**
- **P5: Communicating**
- **P6: Collaborating**

At the completion of the course, the students should be able to articulate the seven big ideas and have developed skills in each of the six computational thinking practices. They should be prepared to take the next step in their computer science education with understanding and confidence.

GRADING POLICY

- Assignments: 30%
- Quizzes: 30%
- Tests/Projects: 40%

Semester grades will be determined by the following percentages:

1st quarter grade: 40%	3rd quarter grade: 40%
2nd quarter grade: 40%	4th quarter grade: 40%
Semester exam: 20%	Create Performance Task: 20%

CREATE PERFORMANCE TASKS

In addition to taking a 70 question AP exam on **Monday, May 9, 2022**, the student is required to complete a large computer programming based performance task (PT) during the course and submit it to the College Board by **Monday, May 2, 2022**.

COURSE OUTLINE

Quarter 1

Unit 1 - Digital Information
Unit 2 - The Internet
Unit 3 - Introduction to App Design

Quarter 2

Unit 4 - Variables, Conditionals, and Functions
Unit 5 - Lists, Loops, and Traversals
Unit 6 - Algorithms

Quarter 3

Unit 7 - Parameters, Return, and Libraries
Unit 8 - Create Performance Task Preparation

Quarter 4

Unit 9 - Data
Unit 10 - Cybersecurity and Global Impacts
AP EXAM Preparation

EXTRA HELP

It is my goal to encourage and help you to realize your unique God-given academic potential, while you discover glimpses of the Lord's amazing mind and character through mathematics. ***PLEASE ask me if you have questions or need help!***

- I will be available before school, during lunch, and after school for you to get extra help. To make sure that I am available, please let me know in advance to set up a time to meet.

- I may also offer special study sessions if needed.

- The best way to reach me outside of school hours is via email *jsugimoto@bereanchristian.com*. Be sure to include your name and a detailed explanation of your question.