

# AP Computer Science A

## Course description:

Credit: 1

Grades: 11-12

Weight: 8

Meets: Daily/Semester or Every other day/Year

Program of Study: All

Repeatable for Credit: No

Dept: Mathematics

Prerequisite: Earned a minimum grade of C- in Computer Science I AND a C- in Algebra 2.

Approved AP Application required.

The AP Computer Science A course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures) approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object-oriented and imperative problem solving and design. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems.

## Units

Object-Oriented Program Design

Program Implementation

Program Analysis

Standard Data Structures

Standard Algorithms

Computing in Context

## Rationale

This course will be an elective in the Mathematics Department that will give students an additional opportunity to engage in and underscore the importance of communicating solutions appropriately and in ways that are relevant to current societal needs.

## Text

Java Software Solutions. Pearson, John Lewis & William Loftus, 2017.

## Course Standards

The College Board has put forth the following curriculum standards for AP Computer Science A, which are satisfied by the approved course syllabus:

- The course teaches students to design and implement computer-based solutions to problems.
- The course teaches students to use and implement commonly used algorithms and data structures.
- The course teaches students to select appropriate algorithms and data structures to solve problems.
- The course teaches students to code fluently in an object-oriented paradigm using the programming language Java.
- The course teaches students to use standard Java library classes from the AP Java subset delineated in Appendix A of the AP Computer Science A Course Description.
- The course includes a structured-lab component composed of a minimum of 20 hours of hands-on lab experiences.
- The course teaches students to recognize the ethical and social implications of computer use.

## Methods of Evaluation

### Quarter Grade:

*Test, Quizzes, and Performance Tasks: 90%*

*Homework/Classwork and participation: 10%*

### Course Grade:

*Quarter 1: 20%*

*Quarter 2: 20%*

*Quarter 3: 20%*

*Quarter 4: 20%*

*Midterm Exam: 10%*

*Final Project: 10%*

Tests: will consist of multiple choice, true and false, and free response questions.

Quizzes: will be used only as needed

Computer / Classwork: will be graded and carry the same weight as quizzes/tests. All computer activities must be completed by due dates. Computer programs will follow strict and rigorous guidelines as set out in the course.

Projects: will have cover multiple standards and learning targets. Grading will be based on content, thoroughness, and clarity of presentation, and level of difficulty of the examined software package.

Homework: will be graded based on right and wrong response. All assignments must be completed by their due date.

Notebook: maybe collected at the teacher's discretion and given a grade