INTRO TO COMPUTER PROGRAMMING

COURSE DESCRIPTION

This course is designed to teach students the fundamentals of computer programming. Topics covered include variables and data types, methods, decision structures and loops. The emphasis is on structured and object-oriented programming methodology. This course is linked with AP Computer Science. Students who enroll in this course need to also enroll in AP Computer Science A 1-2.

This course meets the UC/CSU "G" requirement (Math elective).

MAJOR UNITS OF STUDY (Level A)

This course must be linked with "AP Computer Science A". This course combined with the linked course is informally referred to as "Level A" and is a year-long (two term) class. The course is taught using the Java programming language.

"Level A" covers the equivalent of the first semester course taken by computer science majors, as follows:

- Unit 1: Intro to Object-Oriented Programming
- Unit 2: Variables, Methods, Decisions (if-else)
- Unit 3: Loops
- Unit 4: Strings, Inheritance, Recursion
- Unit 5: Arrays and ArrayLists
- Unit 6: Case Study
- Unit 7: Sorting and Searching Algorithms

STUDENT BACKGROUND (Level A)

- Pre-requisites: Completed Integrated Math I and II (OR completed Algebra 1-2 and Geometry, and at least currently enrolled in Algebra 3-4)
- It is assumed that you have never programmed before. That said, any previous programming experience can be helpful - for example, taking CS Principles prior to this course. (See "possible course sequencing" chart below.)
- It is helpful to be able to think logically (like when you solve math word problems) and pay attention to details.

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ADDITIONAL INFORMATION (Level A)

- You may articulate with Palomar College and receive 4 credits.
- Quarters 2 and 3 receive a weighted AP grade.
- You are given a significant amount of lab time to do programming assignments in class.
- After the AP Exam, students work in groups on a Final Project. Most students choose to create a computer game. Completed games are posted in the Student Gallery at: http://powayusd.sdcoe.k12.ca.us/teachers/tneuhaus
- Some reasons to choose "Level A" over "Level AB":
    - You want to get just an introduction to computer science
    - You have not yet taken Calculus (a pre-requisite for Level AB)
    - Math courses tend to be more challenging for you
    - You often need more time to grasp new concepts
    - You do not want a heavier schedule

WHY LEARN COMPUTER SCIENCE?

- If you plan to major in computer science, this class gives you a head start
- Computer science is also applicable to many other majors, such as the sciences, math and business
- Even if you don't major in any of these fields, chances are you will be using computers in your future job; and you may be interacting with others who are developing software, so it helps to understand what they're talking about
- A rewarding aspect of programming is that one you have done a program correctly, you get to see it work.

POSSIBLE COMPUTER SCIENCE COURSE SEQUENCING