READINESS PROFILE & COURSE EXPECTATIONS

AP COMPUTER SCIENCE PRINCIPLES

COURSE DESCRIPTION

AP Computer Science Principles is designed as a college-level introduction to a computer science course for non-computer science majors. The course focuses on computational thinking and fluency. In order to gain a basic understanding of computers and computation, students will: learn about the impacts of computing; identify abstractions and learn how to use them in computing; be given solutions to computer programs to analyze for correctness and to engage in discussions about the solutions; and create computational artifacts, working individually and in teams.

The course meets the UC "G" requirement (Math elective).

COURSE CONTENT AND EXPECTATIONS

Topics of Study:

- Programming concepts, including variables, if-else, loops, arrays, methods
- Algorithms, including identifying algorithm correctness and trade-offs
- Abstraction (hiding algorithm details)
- Technology and society, such as: how the Internet works; analyzing "big data"; cybersecurity and privacy; and other connections to economic, social and cultural contexts

Features:

- This course allows you to "get your feet wet" and see if you like CS
- It will focus on the use of beginner-friendly drag-and-drop programming environments (e.g. Alice, Scratch, AppInventor); NOT Java
- It will emphasize collaboration (discussions, assignments, projects)
- It will emphasize verbal & written communication, such as: exploring how computing impacts society; explaining how a solution works
- Though this course is not a required pre-requisite, it helps to prepare you for the AP Computer Science A course
- It is a one-term (half-year) course
- It is an AP course.

WHY LEARN THE BASICS OF COMPUTER SCIENCE?

- 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
- Computer science is also applicable to many other majors, such as the sciences, math and business

- Learning to write computer programs is a great way to improve your logical thinking and problem-solving skills
- A rewarding aspect of programming is that one you have done a program correctly, you get to see it work.

STUDENT BACKGROUND

To be prepared for the computational thinking aspect of this course, the required pre-requisite is:

- Integrated Math I (or Algebra 1-2)

To be prepared for the verbal and written communication tasks in this course, it is helpful for students to already have a good understanding of the following…

- How to assess the credibility of Internet sources
- How to reference sources
- The importance of considering audience when writing
- Cause/effect relationships

… and it is helpful for students to also be able to….

- Plan and carry out research to answer a question
- Integrate visuals and text (image and word) in responding to a question
- Use evidence to support an argument
- Describe step-by-step processes

POSSIBLE COMPUTER SCIENCE COURSE SEQUENCING