

COMPUTER SCIENCE -- CAREER/TECH DEPT

Computer Science Principles (PLTW): Full Year

FHS Course #:

Project Lead the Way Course # 10015

IHCC Credit Hours: 3

FHS Credit: 2

Elective: Grades 9, 10, 11, 12

Co-requisite: Algebra 1

Course Description: Using Python as a primary tool and incorporating multiple platforms and languages for computation, this course aims to develop computational thinking, generate excitement about career paths that utilize computing, and introduce professional tools that foster creativity and collaboration. CSP helps students develop programming expertise and explore the workings of the Internet. Projects and problems include app development, visualization of data, cybersecurity, and simulation. Students work in teams to develop computational thinking and solve problems. The course does not aim to teach mastery of a single programming language but aims instead to develop computational thinking. The course also aims to build students' awareness of the tremendous demand for computer specialists and for professionals in all fields who have computational skills. Each unit focuses on one or more computationally intensive career paths. The course also aims to engage students to consider issues raised by the present and future societal impact of computing.

Student Learning Outcomes

1. apply algorithmic thinking
2. apply various programming techniques
3. use variables in programming applications
4. understand data types, draw conclusions and make graphic representations from relevant data
5. identify the components of a digital footprint of the Internet
6. develop understanding of content and flow of data when browsing the Web
7. define Encryption and Security as used in the Web
8. create visualizations to analyze sets of large data

Skills Needed To Be Successful In The Class:

Communication skills

Problem solving skills

Ability to work in small groups

Mathematics success in Algebra 1

Careers related to this course: Software Engineering, Software Development, Computer Engineering, Business related, Science careers

COMPUTER SCIENCE -- CAREER/TECH DEPT

AP Computer Science A --Full year course

FHS Course #: 0324

AP Course #: 10157

Offered biennially: 2019-20, 2021-22

Credit: 2

Elective: Grades 10 - 12

Prerequisite: Computer Science Principles with a "B" or better; Algebra 2 (previously or concurrently)

Course Description:

This course is built around the development of computer programs or parts of programs that correctly solve a given problem. It emphasizes the design issues that make programs understandable, adaptable, and reusable. The course will utilize the Java programming environment. In May students will take the Advanced Placement Computer Science test. Students will also read and report on articles relating to computers.

Skills Needed To Be Successful in the Class:

It is suggested that students possess the knowledge of mathematics at the Algebra 2 level and have experience in problem solving. Students should be comfortable with functions and functional notation. Competence in written communication is important as well to help with documentation. Students should plan on spending several hours weekly outside of class working on the computer. Patience, diligence, and attention to detail are important personality traits for students to have.

Specific Outcomes -- The Student Will Be Expected To work with:

1. Program design -- description, purpose, object-oriented design
 2. Designing and implementing classes
 3. Fundamental data types
 4. Decision making and iteration
 5. Arrays and Array lists
 6. Interfaces, Polymorphism, Inheritance
 7. Recursion
 8. Sorting and searching techniques
 9. Hardware, system software, types of systems

Careers Related to Content:

Computer Science, Computer Programming, Computer Engineering, Information Technology, Computer Information Systems, Mathematics, Science, Medicine, Business, Engineering, Education

