

MATHEMATICS DEPARTMENT
AP COMPUTER SCIENCE (JAVA)
LENGTH: 40 WKS.
GRADE LEVEL: 10, 11, 12

COURSE NO.: 04590

CREDIT: 1

PREREQUISITES: Pass Introduction to Programming

COURSE DESCRIPTION & OBJECTIVES:

The course is built around the development of computer programs of parts of programs that correctly solve a given problem. The course also emphasizes the design issues that make programs understandable, adaptable and when appropriate, reusable. At the same time, the development of useful computer programs and program modules is used as a context for introducing other important concepts in computer science, including the development and analysis of algorithms, the development and use of fundamental data structures, and the study of standard algorithms and typical applications. In addition, an understanding of classes and their interaction in integrated programs, the Java library systems are integral parts of the course.

The following objectives apply to both of the AP Computer Science courses when interpreted within the context of the specific course.

1. Students should be able to design and implement computer-based solutions to problems in several application areas.
2. Students should learn well-known algorithms and data structures.
3. Students must understand and be able to apply object oriented programming including declaring and calling methods. Constructors, Accessors and Modifiers.
4. Students should be able to develop and select appropriate algorithms and data structures to solve problems.
5. Students should be able to code fluently in a well-structured fashion using the programming language Java. Students are expected to be familiar with and be able to use standard Java library classes.
6. Students should be able to read and understand a large program and a description of the design and development process leading to such a program.(Examples of such programs are the AP Computer Science Case Studies.)
7. Students should be able to identify the major hardware and software components of a computer system, their relationship to one another, and the roles of these components within the system.
8. Students should be able to recognize the ethical and social implications of computer use.

INSTRUCTIONAL PROCESSES & MATERIALS:

Both lectures and work sessions on the computers will be used to help students become familiar with JAVA. Numerous short program assignments will be given. A large case study program will be reviewed and the students will be responsible for modifications.

COURSE REQUIREMENTS & EVALUATIVE CRITERIA:

- Students will be evaluated on the basis of quizzes, tests, and programming assignments.

