

MATHEMATICS DEPARTMENT

JAVA PROGRAMMING H/AP: COURSE #357

Contact Information

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The Department's Educational Philosophy

The study of mathematics will enhance the ability of all students to problem solve and to reason. Through a strong standardized departmental program that emphasizes problem solving, communicating, reasoning and proof, making connections, and using representations, students will develop self-confidence and a positive attitude towards mathematics.

Our curriculum matches that of the Massachusetts Mathematics Curriculum Framework, and we are philosophically aligned with the National Council of Teachers of Mathematics Standards.

Guiding Principles

- Mathematical ideas should be explored in ways that stimulate curiosity, create enjoyment of mathematics, and develop depth of understanding.
- Effective mathematics programs focus on problem solving and require teachers who have a deep knowledge of the discipline.
- Technology is an essential tool in a mathematics education, and all students should gain facility in using it where advantageous.
- All students should have a high-quality mathematics program.
- Assessment of student learning in mathematics should take many forms to inform instruction and learning.
- All students should understand the basic structure of mathematics.
- All students should recognize that the techniques of mathematics are reflections of its theory and structure.
- All students should gain facility in applying mathematical skills and concepts.
- All students should understand the role of inductive and deductive reasoning in mathematic and real life situations.

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Course Frequency: Full-year course, five times per week

Credits Offered: Five

Prerequisites: C Programming

Background to the Curriculum

This course, first instituted in 2004, replaced the C++ course when ETS changed the target language for the Advanced Placement examination. It is a full-year course in Java, designed for students with prior programming experience.

Core Topics/Concepts/Skills

- Object oriented programming
- Algorithms
- Data structures
- Problem specifications and organization
- Coding and debugging
- Graphical user interfaces

Course-End Learning Objectives

<u>Learning objectives</u>	<u>Corresponding state standards, where applicable</u>
<ol style="list-style-type: none">1] class methods2] program structures3] event driven programming4] object oriented programming5] interfaces6] arrays7] collections8] exceptions, files9] strings10] recursion11] sorting	

Assessment

Students are assessed by in-class tests as well as the programming they write.

Materials and Resources

Introduction to Computer Science using JAVA, Jesse Liberty et al, Glencoe, 2004.