

The Computer Science Department serves a two-fold purpose:

- 1) to enable students to be competent members of a technological society
- 2) to teach students the skills of decision making and problem solving using electronic technology.

Note: All computer courses require a fee of \$40.00 to cover the cost of materials.

COMPUTER AIDED DESIGN (C.A.D.)

Tri I

Students will work with various software to explore the fundamentals of computer aided design, including 2D sketching, 3D modeling, and the design process. This course will offer students the opportunity to gain experience using a readily applicable job skill. In addition to drawing and modeling, students will be using 3D printers to prototype their work before final approval.

Note: Skills learned will be helpful to members of the Robotics team, but the class is not limited to Robotics students.

Grades 9, 10, 11, 12

COMPUTER ANIMATION

Tri II or Tri III

This class focuses on the fundamental technical skills required to control the objects, characters, and backgrounds of animated scenes. Students will learn the practical applications of various technologies to create color, light, movement, weight, in their own animated scenes. Student will use Blender, a 3D modeling and animation tool, to create their animations in a full, 3D environment. While technology is the focus of this course, students will also study professional animators and learn how they tell stories through their work, using storyboarding, scripting and timing tools to focus their final product into something uniquely their own.

Grades 9, 10, 11, 12

INTRODUCTION TO PROGRAMMING

Tri I, Tri II or Tri III

The Introduction to Programming course will teach the Python programming language to learn the fundamentals of computer science and practice writing code. By learning the basics of programming structure, control flow, and eventually object-oriented programming, students will create a series of increasingly complex programs to test their skills in hands-on applications. By the end of the course, students will have the skill to parse data from spreadsheets, generate math-based programs that will solve complex equations, and even create their own games. Students do not require any previous programming knowledge to succeed in this course.

Grades 9, 10, 11, 12

GAME DESIGN - Advanced

Tri II or Tri III

Our Game Development course will focus on the fundamentals of game programming, art design, and interaction development through hands-on lessons in the Unity game engine. This project-based course will hone your programming skills by making games across a variety of genres while building on technical skills developed in other technology classes. By the end of this class, you will have a sense of the scope and skills required to make blockbuster games and have a path to continue to develop your own talents in the future.

Prerequisite: Introduction to Programming

Grades 9, 10, 11, 12

WEB PROGRAMMING AND DESIGN (WEB ENGINEERING)

Tri I or Tri II

In Web Engineering, students will practice creating web pages, with a focus on writing HTML, CSS, and Javascript to generate page layouts and interactivity. Students will learn the fundamentals of how web servers and networking functions deliver data across the internet. While this is not an art class, students will explore how grid layouts, color, typography, and photography can inform user experience and drive engagement with a website. Students do not require any previous programming knowledge to succeed in this course.

Grades 9, 10, 11, 12

ADVANCED PLACEMENT (AP) COMPUTER SCIENCE “A” – Honors Year long

The AP Computer Science A course is compatible with those topics that are covered in a typical first semester college course in Computer Science as prescribed by the College Board. Over the course of the year, participants will use the JAVA programming language to solve increasingly complex problems designed to teach students about fundamental programming concepts, data structures, algorithm development, and syntax organization. Additional computer science topics, including basic hardware, surveys of the place of computing in modern society, and ethical computing are featured throughout the course.

This course is intended to prepare students for the AP Computer Science A exam, and serves both as an introductory course for computer science majors and majors in other disciplines that require significant involvement with programming. Students who pass the AP test receive advanced standing at many colleges.

Prerequisite: Introduction to Programming or instructor’s permission

Grades 10, 11, 12