

# Computer Science Department

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The Computer Science Department serves a two-fold purpose:

- 1) to enable students to be competent members of a technological society, and
- 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.

## **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. A large part of the course is built around the development of computer programs or parts of programs that correctly solve a given problem, as well as design issues. In addition, other important concepts in computer science are introduced, including the development and analysis of algorithms and data structures, basic hardware and software concepts, and the responsible use of this system.

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 as a course for people who will major in other disciplines that require significant involvement with computing. Students who pass the AP test receive advanced standing at many colleges.

***Prerequisite: Introduction to Programming or instructor’s permission***

***Grades 10, 11, 12***

## **COMPUTER AIDED DESIGN (C.A.D)      Tri I**

Students will work with Onshape software to explore the fundamentals of C.A.D. including 2D sketching, 3D modeling and design. 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 doing some animation and programming.

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

***Grades 9, 10, 11, 12***

## **COMPUTER ANIMATION      Tri I or Tri II or Tri III**

In Computer Animation students will learn how to bring characters, which they create, to life. They will use Adobe Flash, Garage Band and other applications to create animations. Students will study how to plan and create animations using storytelling techniques in a collaborative environment. While there is a technical aspect to this course, students will be using these techniques in a creative way to tell their own stories.

***Grades 9, 10, 11, 12***

## **INTRODUCTION TO PROGRAMMING – Advanced      Tri II or Tri III**

In this course students will be exploring the foundations of computer science and programming. Students will start using Hopscotch on the iPad and then transition into programming with Java. Students will create interactive programs, including games and animation. Students will learn how to create their own methods, use variables, and parameters, as well as how to use conditional and looping structures. As a final project, students will use Java and Robocode to program robots for online competition. No previous programming experience is required.

***Grades 9, 10, 11, 12***

## **PROGRAMMING APPS FOR iOS - Advanced      Tri I or Tri III**

In this course students will learn how to create apps that run on iOS devices. Students will learn how to program using Swift and Objective-C language while using tools such as xCode for programming their apps and graphics programs such as Photoshop for creating design elements used in the apps. We will be looking at different programming principles as we take our apps through the process of creating, testing, and debugging. Prior programming knowledge would be helpful, but it is not required for this course.

***Grades 9, 10, 11, 12***

## **WEB PROGRAMMING AND DESIGN**

## **Tri II**

In Web Programming and Design and Site Management students will be introduced to the basic principles of page and site design, including: layout, media management and HTML code. They will use a variety of applications to create their pages, the content presented on those pages, and to manage the sites in which these pages are contained. Students will learn how to recognize and manipulate HTML tags, as well as create style sheets that will allow them to manage the look and feel of their site.

***Grades 9, 10, 11, 12***