

*This brochure is meant as a guide
for selecting appropriate
Computer Science courses.*

OPPORTUNITIES FOR AN EXCITING AND REWARDING CAREER BEGIN WITH PROPER TRAINING AND PREPARATION. ENROLL IN A COMPUTER SCIENCE COURSE THAT WILL PAVE THE WAY FOR YOUR FUTURE SUCCESS.

WHO SHOULD ENROLL IN A COMPUTER SCIENCE COURSE?

- Students curious about how technology can be used to solve problems in a variety of subject areas.
- Anyone interested in knowing how Computer Science can open up doors of opportunity.
- Those looking to gain an advantage and distinguish themselves for the myriad of technology infused careers available today.

WHAT ELSE SHOULD I KNOW?

- Colleges, universities, and industry are searching for people from underrepresented groups, particularly women, with expertise in technology.
- Contact the Computer Science department or your guidance counselor for additional information about combining technology with your college and career goals.



RESEARCH IT FOR YOURSELF...

- Check out the Salary Wizard at salary.com and you will discover that many of the tech-oriented and tech-infused jobs are well compensated and become the foundation for a satisfying and successful career.
- Also take a look at organizations like the InterAlliance of Greater Cincinnati, interalliance.org, to see how companies are using technology to solve problems in fascinating ways.

AND DO YOURSELF A FAVOR BY...

- Supplementing your Sycamore experience with a Computer Science course.
- Taking a fun and exciting course that is a break from the traditional and routine.

COMPUTER SCIENCE COURSE OFFERINGS



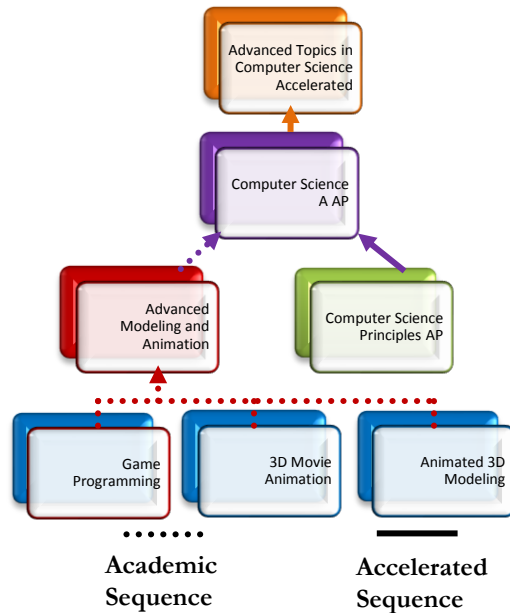
Sycamore High School

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COMPUTER SCIENCE COURSE SEQUENCE

Only Computer Science offers Accelerated and Advance Placement technology options.

Contact the Sycamore High School Computer Science department for advice or to acquire a recommendation.



10001 Game Programming

Prerequisite: None

Sequence: All *Grade:* 9, 10, 11, 12

Length: Semester *Credit:* .5

Learn the programming concepts taught in an entry level college course by building 2D games. Through the use of gaming engines and scripting languages, students will develop skills and techniques that can be transferred to other programming languages such as Java and Python. Culminating projects include stand-alone games to be played with friends and added to a digital portfolio.

10010 3D Movie Animation

Prerequisite: None

Sequence: All *Grade:* 9, 10, 11, 12

Length: Semester *Credit:* .5

Create animations using **Alice**, a tool developed by **Carnegie Mellon University** in partnership with **Electronic Arts** (creator of **Sims**). Fundamental 3D animation and cinematography concepts are introduced using the latest innovations and techniques, similar to those used by studios such as **Disney**, **DreamWorks**, **Pixar**, and **Universal**. By implementing these basic constructs, students are able to establish the foundation of using technology to solve problems in the entertainment industry.

10060 Animated 3D Modeling

Prerequisite: None

Sequence: All *Grade:* 9, 10, 11, 12

Length: Semester *Credit:* .5

Learn the 3D modeling techniques used in movies, visual effects, video games, cartoons, commercials, and animations! Utilizing tools like **Blender**, students will work in this highly skill-based art form to manipulate and sculpt pure imagination into substantial forms. Key concepts include primitives, curves and surfaces, organic modeling, and rigging. By the end of the course, students will have developed a portfolio of original projects that can be used when applying for internships, higher education, or employment.

10020 Advanced Modeling and Animation

Prerequisite: 10001 or 10010 or 10060

Sequence: All *Grade:* 9, 10, 11, 12

Length: Semester *Credit:* .5

Collaborate with artists and technologists to create interactive 3D animations, simulations and role playing games using tools like **Unity**. This course is the confluence of the modeling and animation realms, and becomes the platform for augmented and virtual reality projects. Adding to their fundamental knowledge, students will learn more advanced modeling techniques such as vertex groups, weight painting, and animation workflow, as well as advanced animation concepts such as event processing, collision detection, motion capture, and compositing. Leading to Advanced Placement coursework, this course is recommended for students with a serious interest in the modeling, animation, and software industries.

10030 Computer Science Principles AP

Prerequisite: Computer Science Teacher Recommendation

Sequence: ACC *Grade:* 9, 10, 11, 12

Length: Year *Credit:* 1

As an entry point to the advanced sequence, this course takes a breadth first approach to Computer Science and to technology in general. The focus is to engage students in web development using HTML, CSS, and JavaScript while exploring the impact of technology on our society. Ethical and legal issues will be covered as well as fundamental programming concepts. Ultimately, the goal is to prepare for the AP assessment which includes the submission of student artifacts and the administration of an exam. This course is recommended for students with an interest in applying technology to any discipline and observing its effect on any facet of our society.

10045 Computer Science A AP

Prerequisite: 10020 or 10030

Sequence: ACC *Grade:* 10, 11, 12

Length: Year *Credit:* 1

Using **Java**, preparation for the Advanced Placement Exam is the focus of this course. Students will learn about essential software engineering concepts such as composition, inheritance, data structures, and algorithms. It is recommended that students pursuing degrees and careers in Computer Science, engineering, and applied math and science enroll in this course.

10050 Advanced Topics in Computer Science Accelerated

Prerequisite: 10045

Sequence: ACC *Grade:* 11, 12

Length: Year *Credit:* 1

Exploring new realms of technology is the goal of this course. While working in teams, students will learn about *leading edge* concepts such as augmented and virtual reality, embedded systems, GUI and NUI-based programming, mobile apps, and gaming and simulation development and marketing. Ideal for students pursuing Computer Science and engineering degrees and careers, completion of this course adds greater breadth to their deep knowledge of Computer Science topics.