

Geometry with Computer Visualization and Simulation – This course seeks to introduce students to a range of careers - including software development, computer programming, game design and digital fabrication – as well as methods that use computers to visualize geometric information necessary for product design. Using applied geometry, students create a final 3D-printed product that demonstrates the key role that geometry plays in a particular industry.

Algebra 2 for the 21st Century – This course is designed for students who are passionate about applications of mathematics and have a desire for a career in computer programming. In this course, Algebra 2 standards are combined with game, simulation, and software development concepts into an integrated secondary curriculum that meets both

Students will research, analyze, and modify existing program code and develop their own program code that will integrate major Algebra 2 concepts in each of the six units; linear functions, quadratic functions, polynomial function, rational expressions and equations, exponential and logarithmic functions, and systems of equations. Through the unit programming projects, students understand and master the mathematics and programming code necessary in the development of games such as Pong and Angry Birds and the simulation of fractal images based on iterating rational functions. Students will also explore some ethical issues around the rapid development of technology and its impact on society.

Advanced Placement Computer Science Principles (APCSP) – AP Computer Science Principles introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. With a unique focus on creative problem solving and real-world applications, AP Computer Science Principles prepares students for college and career. The course focuses on 7 “Big Ideas” about the use of computers:

1. Creativity
2. Abstraction
3. Data and Information
4. Algorithms
5. Programming
6. The Internet
7. Global Impact

Advanced Placement Computer Science (APCS) – The APCS course is equivalent to a first-semester, college-level course in computer science. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes object-oriented and imperative problem solving and design using the Java language. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems.

Robotics – This course is a laboratory-based science and engineering course in robotics, electronics, mechanical engineering, and computer programming. The program is designed to interest students in science, technology, and engineering, and to motivate them to pursue advanced education in those fields. Instructional areas will extend through a broad range of subjects that are included in the multidisciplinary field of mechatronics (the synergistic integration of mechanics, electronics, computer science, control engineering, and systems design). The Computer Programming aspect of the class will be a large focus, as the class is one capstone for a Software Development Pathway. Using the engineering design team concept as a model, students will work in small groups to research, design, construct, and program robots. Students will write programs in the programming language Robot-C.