Computer Science

Newman Smith High School

Business & Industry Endorsement

STEM

This four year plan can be used as an example to help plan your high school career.

Subject	9th Grade	10th Grade	11th Grade	12th Grade
Language Arts	English	English	English	English
Math	Math	Math	Math	Math
Science	Science	Science	Science	Science
Social Studies	Social Studies	Social Studies	Social Studies	Social Studies
CTE Courses	Fundamentals of Computer Science **(1 Credit)**	AP Computer Science OR Computer Science I **(1 Credit)**	AP Computer Science A (Math OR LOTE) OR Computer Science II **(1 Credit)**	Project Based Research **(1 Credit)**
Additional Elective				
Additional Elective				
Additional Elective				

Additional Graduation Requirements

- Foreign Language (2 Credits)
- Physical Education (1 Credit)
- Fine Arts (1 Credit)

Possible Industry Based Certifications

- Oracle Certified Associate JAVA SE 8 Programmer
- Oracle Certified Database Associate
- Microsoft Technology Associate, Introduction to Programming Using Python, HTML or CSS
- Microsoft Technology Associate, Introduction to Programming Using Java or Java Script

Occupations	Median Wage	Annual Openings	% Growth
Software Developer, Systems Software	$103,334	2,985	25%
Software Developers, Applications	$104,499	6,311	30%
Computer Programmers	$79,893	1,454	9%

The Programming and Software Development program of study explores the occupations and education opportunities associated with researching, designing, developing, and testing operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computer applications. This program of study may also include exploration into creating, modifying, and testing the codes, forms, and script that allow computer applications to run.

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Recommended Course Sequence

Fundamentals of Computer Science

This course, is intended as a first course for those students just beginning the study of computer science. Students will learn about the computing tools that are used every day. Students will foster their creativity and innovation through opportunities to design, implement, and present solutions to real-world problems. Students will collaborate and use computer science concepts to access, analyze, and evaluate information needed to solve problems. Students will learn the problem-solving and reasoning skills that are the foundation of computer science. By using computer science knowledge and skills that support the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create solutions, and evaluate the results. Students will learn digital citizenship by researching current laws and regulations and by practicing integrity and respect. Students will gain an understanding of the principles of computer science through the study of technology operations and concepts.

AP Computer Science Principles

In this course, Develops beginning skills and concepts associated with programming methodology, programming languages, data types, data structures, algorithms and applications of computing. The Principles course 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.

OR

Computer Science I

This course, designed to foster students' creativity and innovation by presenting opportunities to design, implement and present meaningful programs through a variety of media. Students will collaborate with one another, their instructor and with various electronic communities to solve the problems presented throughout the course. Data analysis will include the identification of task requirements, planning search strategies and the use of computer science concepts to access, analyze, and evaluate information needed to solve problems. By using computer science knowledge and skills that supports the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create a solution, and evaluate the results. Students will learn to become good digital citizens by practicing integrity and respect throughout the Computer Science I course. Students will gain an understanding of the principles of computer science through the study of technology operations, systems, and concepts.

AP Computer Science A (Math or LOTE)

This course, develops beginning skills and concepts associated with programming methodology, programming languages, data types, data structures, algorithms and applications of computing. The Principles course 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.

OR

Computer Science II

Provides beginning skills and concepts associated with programming methodology, programming languages, data types, data structures, algorithms and applications of computing. Year 2 includes object-oriented programming, data structure, abstract data structures, sorting and searching, dynamic memory allocation and algorithmic analysis. JAVA is the programming language used for teaching computer concepts and for completing program assignments.

Project Based Research

This is a course for students to research a real-world problem. Students are matched with a mentor from the business or professional community to develop an original project on a topic related to career interests. Students use scientific methods of investigation to conduct in-depth research, compile findings, and present their findings to an audience that includes experts in the field. To attain academic success, students must have opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings.