

# Career and Technical Education Department

## Computer Science and Information Technology

### Senior High School



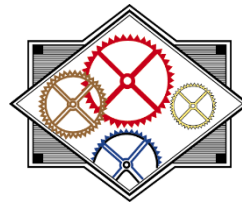
Arts & Communications



Business, Management Marketing & Technology



Health Science



Engineering/Manufacturing & Industrial Technology



Human Services



Natural Resources & Agriscience

VPAA – Meets Visual, Performing & Applied Arts Requirement

OLE – Meets Online Learning Experience Requirement

SMR – Senior Math Related

CP – CTE Completer

C – Commitment Form

21F – Course Available through Section 21F: Expanded Virtual Learning

\*CAREER ZONES - Broad groupings of careers that share similar characteristics and whose employment requirements call for many common interests, strengths, and competencies.

**CTE ADVANCED PLACEMENT COMPUTER SCIENCE PRINCIPLES** (VPAA/SMR/C/CP) (21F) - E190 9,10,11,12 1.0 credit

Advanced Placement Computer Science Principles offers a multidisciplinary approach to teaching the underlying principles of computation. The course will introduce students to the creative aspects of programming, abstractions, algorithms, large data sets, the Internet, cybersecurity concerns, and computing impacts. Advanced Placement Computer Science Principles also gives students the opportunity to use current technologies to create computational artifacts for both self-expression and problem solving.

*\*Course content may address skills pertaining to these potential Career Zones: Business, Management, Marketing, and Technology, Engineering, Manufacturing & Industrial Technology*

**CTE COMPUTER SCIENCE I** (OLE/GR/MMC/SMR) (21F) – E200 10, 11, 12 0.5 credit

PREREQUISITE or Co-Enrolled: CTE AP COMPUTER SCIENCE PRINCIPLES

Computer Science I is an introductory course for students interested in learning the structure and logic of a formal programming language. The course is especially intended for students who may enroll in computer science courses in college. The Computer Science I course will emphasize program structure and design while developing standard programming algorithms and conventional procedures. The topics of study will include program development, functions and procedures, data structures, sorting routines with respect to efficiency, and text files and formatted output.

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**CTE COMPUTER SCIENCE II (GR/MMC/SMR) – E210** 10, 11, 12 0.5 credit  
PREREQUISITE Computer Science I

Computer Science II is a continuation of the one-semester Computer Science I course. The course is designed for college-bound students who will major in a scientific or technical discipline that requires computer involvement. The course emphasizes computer science algorithms and their implementation using static and dynamic data structures. Students will study arrays in further detail. The course also will include an introduction to stacks, queues, linked lists, and binary trees. Emphasis will be on computer science topics using formal-structured program design.

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**CTE ADVANCED PLACEMENT COMPUTER SCIENCE A (OLE/GR/MMC/SMR/C) (21F) – E215** 10, 11, 12 1.0 credit  
Recommended or Co-Enrolled: CTE COMPUTER SCIENCE I AND II

Advanced Placement Computer Science A is an introduction to Object-Oriented computer programming using a high-level programming language such as Java. The course will emphasize program structure and design while developing standard programming algorithms and conventional procedures. Classes, member functions, inheritance, polymorphism, operator overloading, sorting routines, and the Advanced Placement Case study will be covered in this course.

*\*Course content may address skills pertaining to these potential Career Zones: Business, Management, Marketing, and Technology, Engineering, Manufacturing & Industrial Technology*

**CTE WEB PAGE DEVELOPMENT I (VPAA/OLE/SMR) – V250** 10, 11, 12 1.0 credit

This is a hands-on, project-oriented class. Students will have the opportunity to explore the power of internet communications, create their own websites using a variety of tools, and earn the industry-recognized Adobe Dreamweaver CS6 certification. Students will develop real world technological skills while engaging in problem solving and higher-level thinking. The course will begin with basic web concepts and then move into coding such as HTML and CSS. Once basic code is mastered, students will move into Adobe CS6 and begin developing advanced web components and sites using Dreamweaver and Photoshop. Website Development students may qualify for college credit through an articulation agreement.

*\*Course content may address skills pertaining to these potential Career Zones: Business, Management, Marketing, and Technology*

**CTE WEB PAGE DEVELOPMENT II (VPAA/OLE/SMR/CP) – V260** 11, 12 1.0 credit

PREREQUISITE: Web Page Development I

This project-based course will provide a comprehensive look at the business side of website design, while preparing students for the industry-recognized Adobe Photoshop CS6 certifications. Students will utilize the technical skills acquired in Website Development I to improve their design skills and creativity. Additional advanced topics in CSS, Dreamweaver, Flash, Fireworks and Photoshop will be explored. Emphasis will be placed on meeting customer needs, assessing end-user needs, effective design techniques, search engine strategies, and e-commerce strategies. In addition to working on the school website, students will work in web design teams to develop websites for school stakeholders and/or community businesses. Website Development II students may qualify for college credit through an articulation agreement.

*\*Course content may address skills pertaining to these potential Career Zones: Business, Management, Marketing, and Technology*

**CTE COMPUTER NETWORKING AND REPAIR (VPAA/CP) – V544** 11, 12 1.0 credit

In this course, students begin by learning to identify, install, configure, upgrade, trouble-shoot and repair computers and peripherals. The curriculum covers a broad range of topics, such as basic PC systems servicing techniques, controlling boot processes, using multi-meters, managing/modifying directories, creating and executing .BAT, .COM, and .EXE files, mapping memory and utilizing the Microsoft diagnostic (MSD) utility. The course then transitions to the designing, building, and maintaining computer networks. The curriculum covers a broad range of topics, from basic networking skills such as pulling cable to more complex concepts. Students will gain hands on experience with installation, configuration, and troubleshooting basic networking hardware, protocols and services. Much of the content for this course is delivered in an on-line format.

*\*Course content may address skills pertaining to these potential Career Zones: Business, Management, Marketing, and Technology, Human Services, Natural Resources and Agriscience*

**CTE CYBERSECURITY (VPAA/SMR/CP) (21F) - V546** 11,12 1.0 credit

Cybersecurity focuses on the evolving technological environment with an emphasis on securing personal, organizational, and national information. The course explores the broad topic of cybersecurity in a way that personally matters to an individual. Students will learn how to protect their personal data and privacy online and in social media, and why more and more IT jobs require cybersecurity awareness and understanding. Students will investigate the high-skills, high-wage, and in demand career opportunities in the vast field of cybersecurity.

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**STW INFORMATION TECHNOLOGY INTERN – N209** 11, 12 1.0 credits

PREREQUISITE: School to Work Coordinator approval, and completed or co-enrolled in one of the following courses:

- CTE AP Computer Science Principles
- CTE Computer Networking and Repair
- CTE Cybersecurity
- CTE Web Page Development I

This course offers students the opportunity to spend a portion of their school day working in an information technology related training site in the community. This employment experience is related to the career goals of the student and is supervised by a school-to-work coordinator. The student will develop workplace skills and leadership traits in their chosen area of specialty. Evaluation of job performance and assessment of coursework is the responsibility of the STW Coordinator with input from the training site supervisor. This program adheres to all federal and state labor laws.