

(9001310) IT Fundamentals

Version: 2024

Course Attributes

- **Course Number:** 9001310
- **Grade Level:** 2
- **Course Length:** 1 Hours
- **SOC Codes:** Program Primary SOC: 151212 - Network and Computer Systems Administrators
Additional SOCs: *Refer to the Related Careers (SOC Codes) section*

Course Structure

IT Fundamentals

The outline below shows the structure of this Course, including all its requirements and optional components.

Parent

9001310 IT Fundamentals

0 Child Components - 0 Required

Related Careers (SOC Codes)

The career titles and SOC codes listed below are based on the 2018 Standard Occupational Classification (SOC) system, which is a federal statistical standard used by federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. Students completing this program, including required and optional program components, will learn valuable concepts and skills related to the following career(s).

Parent

9001310 IT Fundamentals

- **Primary SOC Code**

151212 - Network and Computer Systems Administrators

- **Secondary SOC Code**

Standards and Benchmarks

National Standards:

9001310 IT Fundamentals

This course introduces students to the essential concepts, components, terminology, and knowledge about computers, computer systems, peripherals, and networks.

CTE-IT.912.9001310.1 - Demonstrate knowledge, skill, and application of computer systems.

Demonstrate knowledge, skill, and application of computer systems.

CTE-IT.912.9001310.1.1

Describe and use current and emerging computer technology and software to perform personal and business related tasks.

CTE-IT.912.9001310.1.2

Describe the types of communications and networking systems used in workplace environments.

CTE-IT.912.9001310.1.3

Locate and use software application reference materials such as on-line help, vendor bulletin boards, tutorials, and manuals.

CTE-IT.912.9001310.1.4

Troubleshoot problems with computer hardware peripherals.

CTE-IT.912.9001310.1.5

Describe ethical, privacy, and security issues and problems associated with computers and information systems.

CTE-IT.912.9001310.1.6

Demonstrate proficiency in using the basic features of GUI browsers.

CTE-IT.912.9001310.1.7

Configure computer systems to protect against various low-level attacks.

CTE-IT.912.9001310.2 - Demonstrate knowledge of different operating systems.

Demonstrate knowledge of different operating systems.

CTE-IT.912.9001310.2.1

Identify the most common computer operating systems.

CTE-IT.912.9001310.2.2

Describe and use industry accepted file naming conventions; particularly in NTFS, ext4, FAT, and ReFS file systems.

CTE-IT.912.9001310.2.3

Demonstrate proficiency with file management tasks (e.g., folder creation, file creation, backup, copy, delete, open, save).

CTE-IT.912.9001310.2.4

Demonstrate a working knowledge of standard file formats.

CTE-IT.912.9001310.2.5

Compare and contrast various operating systems (e.g., Android iOS, Windows, Mac, and Linux).

CTE-IT.912.9001310.2.6

Differentiate between different operating systems and applications.

CTE-IT.912.9001310.2.7

Compare and contrast open source and proprietary software.

CTE-IT.912.9001310.2.8

Explain how system utilities are used to maintain computer performance.

CTE-IT.912.9001310.2.9

Evaluate criteria for selecting an operating system.

CTE-IT.912.9001310.2.10

Configure various operating systems from their default settings to low, medium, and high security level settings.

CTE-IT.912.9001310.3 - Develop a familiarity with the information technology industry.

Develop a familiarity with the information technology industry.

CTE-IT.912.9001310.3.1

Explain how information technology impacts the operation and management of business and society.

CTE-IT.912.9001310.3.2

Identify and describe the various ways of segmenting the IT industry (e.g., hardware vs. software, server vs. client, business vs. entertainment, stable vs. mobile).

CTE-IT.912.9001310.3.3

Describe how digital technologies (social media) are changing both work and personal lifestyles.

CTE-IT.912.9001310.3.4

Demonstrate an understanding of configuring social media used for business to meet various business requirements.

CTE-IT.912.9001310.3.5

Demonstrate an awareness of Cloud based infrastructure including SaaS (Software as a Service) and their impact on the IT industry.

CTE-IT.912.9001310.4 - Develop an awareness of microprocessors and digital computers.

Develop an awareness of microprocessors and digital computers.

CTE-IT.912.9001310.4.1

Explain software hierarchy and its impact on microprocessors as it relates to the limitation and/or increase in security.

CTE-IT.912.9001310.4.2

Explain the need for, and use of, peripherals and how they can compromise security.

CTE-IT.912.9001310.4.3

Demonstrate proficiency installing and using plug-and-play peripherals and explain their associated security risks.

CTE-IT.912.9001310.4.4

Identify the basic concepts of computer maintenance and upgrades and their relevance as it relates to security.

CTE-IT.912.9001310.5 - Develop an awareness of programming languages.

Develop an awareness of programming languages.

CTE-IT.912.9001310.5.1

Explain the need for and use of compilers.

CTE-IT.912.9001310.5.2

Identify the three types of programming design approaches (e.g., top-down, structured, object-oriented).

CTE-IT.912.9001310.5.3

Compare the various types or classes of programming languages (e.g., compiled, interpretive).

CTE-IT.912.9001310.5.4

Differentiate among source code, machine code, interpreters, and compilers.

CTE-IT.912.9001310.5.5

Characterize the major categories of programming languages and how they are used.

CTE-IT.912.9001310.5.6

Create a model flowchart for a computer program using software applications like RAPTOR or MS VISIO.

CTE-IT.912.9001310.5.7

Describe the stages in the software development life cycle and explain how to successfully implement them.

CTE-IT.912.9001310.5.8

Compare security and vulnerabilities of various programming languages.

CTE-IT.912.9001310.6 - Develop an awareness of emerging technologies.

Develop an awareness of emerging technologies.

CTE-IT.912.9001310.6.1

Compare and contrast emerging technologies and describe how they impact the security of business in the global marketplace

(e.g., wireless, wireless web, cell phones, portables/handhelds, vehicles, home networks, peer-to-peer, IoT, embedded systems, AI).

CTE-IT.912.9001310.6.2

Adhere to published best practices for protecting personal identifiable information when using the Internet.

CTE-IT.912.9001310.6.3

Identify trends related to the secure use of information technology in people's personal and professional lives.

CTE-IT.912.9001310.6.4

Characterize how the rapid pace of change in information technology impacts our society's ability to keep the appropriate level of security.

CTE-IT.912.9001310.7 - Demonstrate an understanding of the Open Systems Interconnection (OSI) models.

Demonstrate an understanding of the Open Systems Interconnection (OSI) models.

CTE-IT.912.9001310.7.1

Explain the interrelations of the seven layers of the Open Systems Interconnection (OSI) as it relates to hardware and software.

CTE-IT.912.9001310.7.2

Describe the purpose of the OSI model and each of its layers.

CTE-IT.912.9001310.7.3

Explain specific functions belonging to each OSI model layer.

CTE-IT.912.9001310.7.4

Understand how two network nodes communicate through the OSI model.

CTE-IT.912.9001310.7.5

Discuss the structure and purpose of data packets and frames.

CTE-IT.912.9001310.7.6

Describe the two types of addressing covered by the OSI model.

CTE-IT.912.9001310.8 - Demonstrate an understanding of the TCP/IP model.

Demonstrate an understanding of the TCP/IP model.

CTE-IT.912.9001310.8.1

Explain the interrelations of the four layers of the TCP/IP model as it relates to hardware and software.

CTE-IT.912.9001310.8.2

Describe the purpose of the TCP/IP model and each of its layers.

CTE-IT.912.9001310.8.3

Explain specific functions belonging to each TCP/IP model layer.

CTE-IT.912.9001310.8.4

Understand how two network nodes communicate through the TCP/IP model.

CTE-IT.912.9001310.8.5

Describe the two types of addressing covered by the TCP/IP model.

CTE-IT.912.9001310.9 - Identify computer components and their functions.

Identify computer components and their functions.

CTE-IT.912.9001310.9.1

Identify the internal components of a computer (e.g., power supply, hard drive, mother board, I/O cards/ports, cabling).

CTE-IT.912.9001310.9.2

Use common computer and programming terminology.

CTE-IT.912.9001310.10 - Demonstrate proficiency using the Internet to locate information.

Demonstrate proficiency using the Internet to locate information.

CTE-IT.912.9001310.10.1

Identify and describe web terminology.

CTE-IT.912.9001310.10.2

Define Universal Resource Locators (URLs) and associated protocols (e.g., http, ftp, telnet, mailto) and their associated secure protocols (e.g. https, ftps, ssh).

CTE-IT.912.9001310.10.3

Compare and contrast the types of Internet domains (e.g., .com, .org, .edu, .gov, .net, .mil).

CTE-IT.912.9001310.10.4

Demonstrate proficiency using search engines, including Boolean search strategies.

CTE-IT.912.9001310.10.5

Demonstrate proficiency using various secure web tools (e.g., downloading of files, transfer of files, SSH, PDF).

CTE-IT.912.9001310.10.6

Compare and contrast the roles of web servers and web browsers.

CTE-IT.912.9001310.10.7

Compare and contrast MS Web Servers and Linux Web Servers.

CTE-IT.912.9001310.11 - Demonstrate an understanding of Internet safety and ethics.

Demonstrate an understanding of Internet safety and ethics.

CTE-IT.912.9001310.11.1

Describe cyber-bullying and its impact on perpetrators and victims.

CTE-IT.912.9001310.11.2

Differentiate between viruses and malware, specifically their sources, ploys, and impact on personal privacy and computer operation, and ways to avoid infection.

CTE-IT.912.9001310.11.3

Describe risks associated with sexting, related legal issues, social engineering aspects, prevention methods, and reporting of offenses.

CTE-IT.912.9001310.11.4

Describe the risks associated with online gaming and ways to reduce these risks.

CTE-IT.912.9001310.11.5

Describe the intellectual property rights, ethics and legalities of downloading music or videos from the Internet.

CTE-IT.912.9001310.11.6

Describe various risks associated with social networking sites and ways to reduce these risks.

CTE-IT.912.9001310.11.7

Describe the risks associated with various conferencing programs and ways to reduce these risks.

CTE-IT.912.9001310.11.8

Adhere to cyber safety practices with regard to conducting Internet searches, email, chat rooms, and other social network websites.

CTE-IT.912.9001310.12 - Demonstrate proficiency using common software applications.

Demonstrate proficiency using common software applications.

CTE-IT.912.9001310.12.1

Compare and contrast the appropriate use of various software applications (e.g., word processing, desktop publishing, graphics design, web browser, email, presentation, database, scheduling, financial management, Java applet, music).

CTE-IT.912.9001310.12.2

Demonstrate proficiency in the use of various software applications (e.g., word processing, desktop publishing, graphics design, web browser, email, presentation, database, scheduling, financial management, Java applet, music).

CTE-IT.912.9001310.13 - Perform email activities.

Perform email activities.

CTE-IT.912.9001310.13.1

Describe email capabilities and functions.

CTE-IT.912.9001310.13.2

Identify components of an email message.

CTE-IT.912.9001310.13.3

Identify the components of an email address.

CTE-IT.912.9001310.13.4

Identify when to use different email options.

CTE-IT.912.9001310.13.5

Attach a file to an email message.

CTE-IT.912.9001310.13.6

Forward an email message.

CTE-IT.912.9001310.13.7

Use an address book if an address book is available via the school's Outlook server for the student to use.

CTE-IT.912.9001310.13.8

Reply to an email message.

CTE-IT.912.9001310.13.9

Use the Internet to perform email activities.

CTE-IT.912.9001310.13.10

Identify the appropriate use of email and demonstrate related email etiquette.

CTE-IT.912.9001310.13.11

Recognize a fraudulent email and deal with it appropriately.

CTE-IT.912.9001310.13.12

Identify common problems associated with widespread use of email.

CTE-IT.912.9001310.13.13

Create folders to organize email.

CTE-IT.912.9001310.14 - Demonstrate proficiency in using presentation software and equipment.

Demonstrate proficiency in using presentation software and equipment.

CTE-IT.912.9001310.14.1

Produce a presentation that includes music, animation, and digital photography and present it using appropriate technology.

CTE-IT.912.9001310.14.2

Using presentation software, create a multimedia presentation that incorporates shot and edited video, animation, music, narration and adheres to good design principles, use of transitions, and effective message conveyance.

CTE-IT.912.9001310.14.3

Demonstrate knowledge of the roles and responsibilities of a multimedia production team (e.g., project manager, creative or design director, content experts, writers, graphic designers, animators, sound designers, videographer, interface designers/programmers).

CTE-IT.912.9001310.14.4

Collaborate with team members to plan, edit, evaluate, and present a multimedia presentation where individuals on the team function in specific production roles.

CTE-IT.912.9001310.14.5

Create a self-running presentation with synchronized audio, convert presentation slides (e.g., PowerPoint) into streaming ASF files for use on the web.

CTE-IT.912.9001310.15 - Perform decision-making activities in a multimedia environment.

Perform decision-making activities in a multimedia environment.

CTE-IT.912.9001310.15.1

Determine work priorities, the audience, project budgets, project specifications, and the production schedule.

CTE-IT.912.9001310.15.2

Evaluate and select appropriate software packages and multimedia tools to complete assigned tasks.

CTE-IT.912.9001310.15.3

Present and defend design projects.

CTE-IT.912.9001310.16 - Demonstrate language arts knowledge and skills.

Demonstrate language arts knowledge and skills.

CTE-IT.912.9001310.16.1

Locate, comprehend and evaluate key elements of oral and written information.

CTE-IT.912.9001310.16.2

Draft, revise, and edit written business technology documents using correct grammar, punctuation and vocabulary (e.g., Business Continuity and Disaster Recovery plan, Incident Response plan, IT reports and procedures manuals).

CTE-IT.912.9001310.16.3

Present information formally and informally to instruct others on Computer Security Awareness and Victim Prevention.

CTE-IT.912.9001310.17 - Demonstrate mathematics knowledge and skills.

Demonstrate mathematics knowledge and skills.

CTE-IT.912.9001310.17.1

Demonstrate knowledge of arithmetic operations.

CTE-IT.912.9001310.17.2

Construct charts/tables/graphs using functions and data and relate it to IT risk and business continuity.

CTE-IT.912.9001310.17.3

Demonstrate an understanding of binary numbers and ASCII characters.

CTE-IT.912.9001310.18 - Demonstrate science knowledge and skills.

Demonstrate science knowledge and skills.

CTE-IT.912.9001310.18.1

Discuss the role of creativity in constructing scientific questions, methods and explanations.

CTE-IT.912.9001310.18.2

Formulate scientifically investigable questions, construct investigations, collect and evaluate data, and develop scientific recommendations based on findings.

Related CTE Program

0511100315:

Applied Cybersecurity

This course introduces students to the essential concepts, components, terminology, and knowledge about computers, computer systems, peripherals, and networks.

State Adopted Instructional Materials

[Author(s)], ([Copyright]), [Title] ([Edition] ed.), [Publisher].

CPALMS Educational Resources

Click [HERE](#) to access more than [XXXX] CPALMS-approved educational resources aligned to the standards and benchmarks in this CTE program.