

ARIZONA CTE CAREER PREPARATION STANDARDS & MEASUREMENT CRITERIA

COMPUTER MAINTENANCE, 15.1200.2	
STANDARD 1.0 – APPLY PROBLEM-SOLVING AND CRITICAL THINKING SKILLS TO INFORMATION TECHNOLOGY	
1.1	Describe methods used to establish priorities
1.2	Prepare a plan of work and schedule information technology tasks
1.3	Use problem-solving processes
1.4	Identify common project management concept (e.g., project management triangle, goals, and Gantt charts) and their limitations
1.5	Evaluate the results of the problem-solving process
STANDARD 2.0 – MAINTAIN A SAFE GREEN INFORMATION TECHNOLOGY WORK ENVIRONMENT	
2.1	Demonstrate personal responsibility for developing and maintaining a safe and healthy information technology work environment
2.2	Use the tools, materials, and equipment commonly used in the field of information technology
2.3	Identify ergonomics and repetitive strain injuries commonly experienced in information technology occupations
2.4	Determine safe working practices to avoid or eliminate electrical hazards
STANDARD 3.0 – RECOGNIZE SECURITY ISSUES RELATED TO INFORMATION TECHNOLOGY	
3.1	Identify procedures to maintain data integrity and security
3.2	Identify security issues related to computer hardware, software, and data
3.3	Identify methods to protect a computer from malicious software
3.4	Define concepts such as phishing, viruses, e-mail attachments, social engineering, spoofing, identify theft, and spamming
3.5	Explain concepts such as denial of service, hacking/cracking, intrusion, and intellectual property
STANDARD 4.0 – EXPLORE LEGAL AND ETHICAL ISSUES RELATED TO INFORMATION TECHNOLOGY	
4.1	Explore issues regarding intellectual property rights including copyright, software licensing, and software duplication
4.2	Identify issues and trends affecting computers and information privacy
4.3	Differentiate between ethical and unethical uses of information technology
4.4	Examine the relationship between ethics and the law in relation to information technology
4.5	Identify workers' rights regarding workplace issues including safety, drug testing, harassment, discrimination, and privacy

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STANDARD 5.0 – DEMONSTRATE THE USE OF BINARY AND OTHER NUMERIC SYSTEMS IN COMPUTER APPLICATIONS	
5.1	Convert decimals to binary
5.2	Identify the relationship of bits to common hard drive capacities
5.3	Identify the relationship of hertz to process and buss speed
STANDARD 6.0 – DESCRIBE THE DEVELOPMENT/EVOLUTION OF COMPUTERS	
6.1	Explain the historical evolution of the computer and computer networks
6.2	Explain how the development of computers has impacted modern life
6.3	Identify trends in information technology
STANDARD 7.0 – INSTALL, CONFIGURE, AND UPGRADE COMPUTERS	
7.1	Identify the purpose and characteristics of common system components
7.2	Demonstrate the basic procedures for adding and removing common system components and recognizing associated cable connections
7.3	Delineate the names, purposes, and performance characteristics of common peripheral ports
7.4	Demonstrate the proper procedures for installing and configuring common peripheral devices
7.5	Identify issues that must be considered when upgrading a computer
STANDARD 8.0 – DIAGNOSE AND TROUBLESHOOT COMPUTERS	
8.1	Use algorithm steps to isolate and troubleshoot common computer problems
8.2	Demonstrate how to elicit system problems from customers
8.3	Determine whether a problem is hardware or software related
STANDARD 9.0 – IMPLEMENT PREVENTIVE MAINTENANCE, SAFETY, AND ENVIRONMENTAL PROCEDURES	
9.1	Establish procedures for the various types of preventive maintenance of computers and peripherals, e.g., removing dust and defragmenting drives
9.2	Explain various safety measures and procedures including electrostatic discharge and how inadequate measures can damage equipment
9.3	Identify proper safety procedures relating to high voltage and other electrical equipment
9.4	Identify environmental protection measures and procedures and environmental guidelines
STANDARD 10.0 – MAINTAIN MOTHERBOARDS, PROCESSORS, AND MEMORY	
10.1	Identify between CPU chip types and associated sockets

These technical knowledge and skill standards were validated by a Skill Standards Validation Committee on April 30, 2009, and used in the adaptation, adoption, and development of test items for first time testing in Spring 2010.

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10.2	Identify the operational characteristics of RAM such as speed, type, and size
10.3	Identify the responsibility of the various components of the motherboard such as expansion slots and chip sets
10.4	Identify the basic compatibility guidelines of the motherboard/processors/memory
10.5	Identify the purpose of the BIOS
10.6	Explain how environmental factors including heat, humidity, vibration, and shocks can affect equipment
STANDARD 11.0 – INSTALL AND MAINTAIN PRINTERS	
11.1	Compare and contrast printer technologies including laser, ink dispersion, dot matrix, solid ink, thermal, and dye sublimation
11.2	Determine the optimal interface option for each printer technology
11.3	Distinguish the options to upgrade a printer i.e., memory, hard drives, NICS, etc.
11.4	Resolve common printer problems
STANDARD 12.0 – DEMONSTRATE THE USE OF BASIC NETWORKING HARDWARE	
12.1	Differentiate common types of network cables and their characteristics
12.2	Install and configure network cards
12.3	Compare common network protocols
12.4	Identify common networking topologies
12.5	Differentiate common technologies available for establishing network connectivity, e.g., routers, wireless, hubs, and modem
12.6	Diagnose simple hardware problems in networking equipment
STANDARD 13.0 – UNDERSTAND THE BASICS OF COMMON OPERATING SYSTEMS	
13.1	Distinguish the major desktop components and interfaces and their function, e.g., taskbar and menus
13.2	Differentiate the characteristics of native Windows applications
13.3	Maneuver major operating system interfaces, i.e., Windows Explorer, MMC, and Command line
13.4	Identify the function of major system files, i.e., MSDOS.SYS, AUTOEXEC.BAT, WIN.INI, CONFIG.SYS, and BOOT.INI
13.5	Demonstrate the ability to use command-line functions and utilities to manage the operating system including the proper syntax and switches
13.6	Demonstrate basic concepts and procedures for creating, viewing, and managing disks, directories, and files
13.7	Demonstrate the proper procedures for changing file attributes and the ramifications of those changes including security issues

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13.8	Identify the major operating system utilities, their purpose, location, and availability
13.9	Identify common file system formats
13.10	Identify the function of the Windows registry and top-level components
13.11	Identify common hard drive redundancy options, i.e., RAID
STANDARD 14.0 – INSTALL, CONFIGURE, AND UPGRADE THE OPERATING SYSTEM	
14.1	Install various Windows applications determining operating system installation options
14.2	Configure device drivers
14.3	Backup and restore user data
14.4	List common symptoms and problems encountered during installations or upgrades
14.5	Document steps to perform operating system upgrades
14.6	Demonstrate basic system boot sequences and boot methods including an emergency boot disk with utilities
14.7	Demonstrate procedures for installing and adding a device including loading, adding, and configuring device drivers and required software
14.8	Interpret procedures necessary to optimize the operating system and major operating system subsystems
14.9	Migrate a user from one system to another, retaining all user software options and documents
STANDARD 15.0 – DIAGNOSE AND TROUBLESHOOT A COMMON OPERATING SYSTEM	
15.1	Interpret the meaning of common error codes and startup messages from the boot sequence and identify steps to correct problems
15.2	Identify when to use common diagnostic utilities and tools
15.3	Identify common operational and usability problems and determine how to resolve them
15.4	Troubleshoot printing problems
15.5	Implement solutions for viruses and virus types
STANDARD 16.0 – CONFIGURE A NETWORK	
16.1	Classify the networking capabilities of common operating systems
16.2	Configure protocols, i.e., TCP/IP, IPX/SPX, AppleTalk, NetBEUI/NetBIOS
16.3	Demonstrate the ability to use network troubleshooting applications, i.e., IPCONFIG, WINIPCFG, PING, TRACERT, NSLOOKUP, DIG, and NETSTAT
16.4	Define the basic internet protocols and terminologies

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16.5	Identify procedures for establishing internet connectivity
16.6	Install and configure browsers including enable/disable script support, configure proxy settings, configure security settings
16.7	Configure personal firewall protection
16.8	Install and configure e-mail applications
16.9	Install and configure secure wireless networking