Cisco IT Essentials v7 Standards Alignment

Texas Computer Maintenance TEKS (§130.303 & 304)

CompTIA A+ Objectives (1001 &1002)

CompTIA IT Fundamentals+ Objectives (FC0-U61)

Microsoft Technology Associate (MTA):
Windows Operating System Fundamentals Objectives (98-349)

DoDEA IT Objectives and IT-NET Objectives

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IT Essentials v7.0 Course Outline

Chapter /Section		Goals/Objectives
Chapter 1. Introduction to Personal Computer Hardware		**Select the appropriate computer components to build, repair, or upgrade personal computers.**
1.1	Personal Computers	Explain how personal computer components work together.
1.2	PC Components	Explain the Features and Functions of components.
1.3	Computer Disassembly	Disassemble a PC.
Chapter 2. PC Assembly		**Install components to build, repair, or upgrade personal computers.**
2.1	Assemble the Computer	Build a computer.
Chapter 3. Advanced Computer		**Install and configure components to upgrade a computer.**
3.1	Boot the Computer	Explain how to verify BIOS and UEFI settings.
3.2	Electrical Power	Explain electrical power.
3.3	Advanced Computer Functionality	Explain computer functionality.
3.4	Computer Upgrade	Select components to upgrade a computer to meet requirements
3.5	Protecting the Environment	Explain the necessary procedures to protect the environment
Chapter 4. Preventive Maintenance		**Perform Troubleshooting on personal computers.**
4.1	Preventive Maintenance	Explain why preventive maintenance must be performed on personal computers.
4.2	Troubleshooting Process	Troubleshoot problems with PC and Peripheral devices
Chapter 5. Networking Concepts		**Explain how computers communicate on a network.**
5.1	Network Components and Types	Explain the components and types of computer networks.
5.2	Networking Protocols, Standards, and Services	Explain networking protocols, standards and services.
5.3	Network Devices	Explain the purpose of devices on a network.
5.4	Network Cables	Build a network cable.
Chapter 6. Applied Networking		**Configure devices to communicate on a network.**
6.1	Device to Network Connection	Configure devices for wired and wireless networks.
6.2	Network Troubleshooting	Troubleshoot problems and solutions related to networks.
Chapter 7. Laptops and Other Mobile Devices		**Explain how to troubleshoot Laptops and other Mobile Devices.**
7.1	Characteristics of Laptops and Other Mobile Devices.	Explain the features and functions of laptops and other mobile devices.
7.2	Laptop Configuration	Explain how to configure laptop power settings and wireless
7.3	Laptop Hardware and Component Installation and Configuration	Explain how to remove and install laptop components.
7.4	Other Mobile Device Hardware Overview	Explain the purpose and characteristics of other mobile devices.
7.5	Network Connectivity and Email	Explain how to configure network connectivity and email on mobile devices.
7.6	Common preventive maintenance techniques for Laptops and other Mobile Devices.	Use common preventive maintenance techniques for Laptops and other Mobile Devices.
7.7	Basic Troubleshooting Process for Laptops and other Mobile Devices	Explain how to troubleshoot Laptops and other Mobile Devices.
Chapter 8. Printers		**Install a printer to meet requirements.**
8.1	Common Printer Features	Explain the purpose and characteristics of different types of printers.
8.2	Printer Type Comparison	Compare Different Types of Printers

IT Essentials v7.0 Course Outline

Chapter /Section		Goals/Objectives
8.3	Installing and Configuring Printers	Install a printer.
8.4	Sharing Printers	Configure printer sharing.
8.5	Maintaining and Troubleshooting Printers	Explain how to improve printer availability.
Chapter 9. Virtualization and Cloud		**Describe virtualization and cloud computing.**
9.1	Cloud Computing Concepts	Explain Cloud and Virtualization..
9.2	Cloud Computing	Compare and contrast cloud computing concepts
Chapter 10. Windows Installation		**Install Windows operating systems.**
10.1	Modern Operating Systems	Explain operating system requirements.
10.2	Install Windows	Install an operating system.
Chapter 11. Windows Configuration		**Perform management and maintenance of Windows operating systems.**
11.1	Windows Desktop and File Explorer	Configure the Windows Desktop and File Explorer.
11.2	Configuring Windows with Control Panels	Configuring Windows with Control Panels.
11.3	System Administration	Use Windows tools and utilities to manage Windows system.
11.4	Command- Line Tools	Use Microsoft Windows command line tools.
11.5	Windows Networking	Configure a Windows computer to work on a network.
11.6	Common Preventive Maintenance Techniques for Operating Sytems	Use common preventive maintenance on a computer using Micorsoft Windows tools.
11.7	Basic Troubleshooting for Windows Operating System	Explain how to troubleshoot Microsoft Windows operating system.
Chapter 12. Mobile, Linux, and OSX Operating Systems		**Explain how to configure, secure, and troubleshoot mobile, Mac, and Linux operating systems.**
12.1	Mobile Operating Systems	Explain the purpose and characteristics of mobile operating systems.
12.2	Methods for Securing Mobile Devices	Explain methods for securing mobile devices.
12.3	Linux and Mac Operating Systems	Explain the purpose and characteristics of Mac and Linux operating systems.
12.4	Basic Troubleshooting Process for Other Operating Systems	Explain how to troubleshoot other operating systems.
Chapter 13. Security		**Implement basic host, data, and network security.**
13.1	Security Threats	Explain Security Threats
13.2	Security Procedures	Explain Security Procedures
13.3	Securing Devices	Configure basic security settings and policies for end devices.
13.4	Secure Mobile Devices	Explain methods for securing mobile devices.
13.5	Wireless Security	Configure wireless security
13.6	Basic Troubleshooting Process for Security	Explain the six steps of the troubleshooting process for security.
Chapter 14. The IT Professional		**Explain the roles and responsibilities of the IT Professional.**
14.1	Communication Skills and the IT Professional	Explain why good communication skills are a critical part of IT work.
14.2	Ethical and Legal Issues in the IT Industry	Explain appropriate behavior when faced with the legal and ethical issues that arise in the IT industry.
14.3	Call Center Technicians	Explain the call center environment and technician responsibilities.

IT Essentials v7.0 Standards Alignment

Chapter /Section		Goals/Objectives	CM.303 TEKS Section (c) Objectives	CML.304 TEKS Section (c) Objectives	A+ Core 1 Objectives	A+ Core 2 Objectives	IT Fundamentals+ Objectives	MTA: OS Fundamentals Objectives	DoDEA IT Objectives	DoDEA IT-NET Objectives
Chapter 1. Introduction to Personal Computer Hardware		**Select the appropriate computer components to build, repair, or upgrade personal computers.**	1.A	1.C						
1.1	Personal Computers	Explain how personal computer components work together.	4.A, 4.B, 4.C, 4.E, 4.F, 4.J	3.D			1.1, 1.2, 1.3, 1.4, 1.5		5.0, 6.0, 9.0	
1.2	PC Components	Explain the Features and Functions of components.	4.A, 4.E, 4.G, 4.H, 4.I, 4.J, 5.A	2.B, 3.D, 4.B, 4.C, 4.D, 5.B	3.1, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 5.2		2.1, 2.3, 2.5, 2.6		2.0, 6.0, 9.0, 11.0	
1.3	Computer Disassembly	Disassemble a PC.	1.E, 4.D	1.G, 2.A, 3.A, 3.B, 3.C, 4.B, 4.C, 4.D, 5.A, 6.A, 6.J	3.1, 3.3, 3.4, 3.5, 3.6, 3.7, 3.9, 5.2	4.4	2.1, 2.3, 2.5		11.0	
Chapter 2. PC Assembly		**Install components to build, repair, or upgrade personal computers.**	1.A	1.C						
2.1	Assemble the Computer	Build a computer.	1.E, 4.D	1.G, 2.A, 2.B, 3.A, 3.B, 3.C, 4.D, 5.A, 5.B, 6.A, 6.B, 6.J	3.1, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 5.2	4.4	2.1, 2.3, 2.5		11.0	
Chapter 3. Advanced Computer		**Install and configure components to upgrade a computer.**	1.A	1.C						
3.1	Boot the Computer	Explain how to verify BIOS and UEFI settings.		6.B, 6.C, 6.D, 6.G	1.3, 3.1				11.0	
3.2	Electrical Power	Explain electrical power.		4.A	3.1, 3.7	4.5			11.0	
3.3	Advanced Computer Functionality	Explain computer functionality.		4.C, 6.D	3.8, 3.9, 3.10, 5.3, 5.4				11.0	
3.4	Computer Upgrade	Select components to upgrade a computer to meet requirements		6.J	3.7, 3.8, 5.4				11.0	
3.5	Protecting the Environment	Explain the necessary procedures to protect the environment	1.E	1.G	3.8, 5.4	4.5			11.0	
Chapter 4. Preventive Maintenance		**Perform Troubleshooting on personal computers.**	1.A	1.C						
4.1	Preventive Maintenance	Explain why preventive maintenance must be performed on personal computers.	1.C, 4.D, 5.D, 5.F	1.E, 2.A, 3.B, 6.A, 6.D, 7.F, 6.J, 9.A, 9.B	5.1, 5.2, 5.2, 5.4	4.4			11.0	
4.2	Troubleshooting Process	Troubleshoot problems with PC and Peripheral devices	1.C, 4.D, 5.D, 8.C	1.E, 9.A, 9.B	5.1, 5.2, 5.2, 5.4		1.6			
Chapter 5. Networking Concepts		**Explain how computers communicate on a network.**	1.A	1.C						
5.1	Network Components and Types	Explain the components and types of computer networks.	3.B, 8.A	2.C, 4.C, 8.A	2.5, 2.6		2.4, 2.7			1.1, 1.2, 1.3, 1.4, 1.5, 2.3, 2.4, 3.1, 3.5
5.2	Networking Protocols, Standards, and Services	Explain networking protocols, standards and services.	3.B, 8.A	2.C, 4.C, 8.A	2.1, 2.4, 2.5		2.4, 2.7			1.1, 1.2, 1.3, 1.4, 1.5, 2.3, 2.4, 3.1, 3.4, 3.5
5.3	Network Devices	Explain the purpose of devices on a network.	3.B, 8.A	2.B, 2.C, 4.C, 8.A	2.2, 2.4, 2.5, 2.7		2.7			1.1, 1.2, 1.3, 1.4, 1.5, 2.3, 2.4, 3.5, 3.6
5.4	Network Cables	Build a network cable.	3.B, 8.A	2.B, 2.C, 4.C, 8.A	2.7					1.1, 1.2, 1.3, 1.4, 1.5, 2.3, 2.4, 3.3, 3.6
Chapter 6. Applied Networking		**Configure devices to communicate on a network.**	1.A	1.C						
6.1	Device to Network Connection	Configure devices for wired and wireless networks.	3.B, 8.A, 8.B	2.C, 8.A, 8.B	2.3, 2.4, 2.6, 2.7, 2.8	2.10	2.8			2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10
6.2	Network Troubleshooting	Troubleshoot problems and solutions related to networks.	1.C, 3.B, 8.C	1.E, 2.A, 2.C, 3.B, 8.A, 8.C	2.8, 5.1, 5.7	2.10				2.1, 2.2, 2.3, 2.4, 3.4, 3.5, 3.6, 3.7, 4.1, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10

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Chapter /Section		Goals/Objectives	CM.303 TEKS Section (c) Objectives	CML.304 TEKS Section (c) Objectives	A+ Core 1 Objectives	A+ Core 2 Objectives	IT Fundamentals+ Objectives	MTA: OS Fundamentals Objectives	DoDEA IT Objectives	DoDEA IT-NET Objectives
Chapter 7. Laptops and Other Mobile Devices		**Explain how to troubleshoot Laptops and other Mobile Devices.**	1.A	1.C						
7.1	Characteristics of Laptops and Other Mobile Devices.	Explain the features and functions of laptops and other mobile devices.	4.H, 5.B	4.B, 4.C	1.1, 1.3				11.0	
7.2	Laptop Configuration	Explain how to configure laptop power settings and wireless settings.		4.B	1.1, 1.3		2.2		11.0	
7.3	Laptop Hardware and Component Installation and Configuration	Explain how to remove and install laptop components.	5.C	2.B, 4.B, 4.D	1.1, 1.2, 1.3, 5.5		2.2		11.0	
7.4	Other Mobile Device Hardware Overview	Explain the purpose and characteristics of other mobile devices.	5.C	4.B	1.1, 1.2, 1.3, 5.5				11.0	
7.5	Network Connectivity and Email	Explain how to configure network connectivity and email on mobile devices.	5.C, 8.B		1.2, 1.3, 1.6			1.4		
7.6	Common preventive maintenance techniques for Laptops and other Mobile Devices.	Use common preventive maintenance techniques for Laptops and other Mobile Devices.		2.B, 3.B, 3.C	1.2, 1.5, 5.5				11.0	
7.7	Basic Troubleshooting Process for Laptops and other Mobile Devices	Explain how to troubleshoot Laptops and other Mobile Devices.	1.C	1.E, 2.A, 3.B, 3.C, 6.A	1.2, 1.5, 5.5				11.0	
Chapter 8. Printers		**Install a printer to meet requirements.**	1.A	1.C						
8.1	Common Printer Features	Explain the purpose and characteristics of different types of printers.			3.10, 3.11			5.3		
8.2	Printer Type Comparison	Compare Different Types of Printers			3.10, 3.11			5.3		
8.3	Installing and Configuring Printers	Install a printer.		4.E, 5.B	3.10, 3.11			4.2		
8.4	Sharing Printers	Configure printer sharing.		4.E	3.10, 3.11					
8.5	Maintaining and Troubleshooting Printers	Explain how to improve printer availability.	1.C, 5.D	1.E, 2.A, 3.B, 3.C, 4.E, 6.A	3.10, 3.11, 5.6			4.2	11.0	
Chapter 9. Virtualization and Cloud		**Describe virtualization and cloud computing.**	1.A	1.C						
9.1	Cloud Computing Concepts	Explain Cloud and Virtualization..		3.D	4.1, 4.2			5.2		
9.2	Cloud Computing	Compare and contrast cloud computing concepts		3.D, 5.B, 6.L	1.7, 3.4, 4.1, 4.2					
Chapter 10. Windows Installation		**Install Windows operating systems.**	1.A	1.C						
10.1	Modern Operating Systems	Explain operating system requirements.	6.A, 6.B, 7.B, 7.C, 7.D	3.D, 6.N, 7.A		1.1, 1.2	3.1, 3.2, 3.4	2.1, 2.4	6.0, 12.0	3.2, 3.8
10.2	Install Windows	Install an operating system.		7.A, 7.B, 7.D, 8.B		1.3	3.1	2.2, 2.3, 3.1	12.0	4.2
Chapter 11. Windows Configuration		**Perform management and maintenance of Windows operating systems.**	1.A	1.C						
11.1	Windows Desktop and File Explorer	Configure the Windows Desktop and File Explorer.	7.A, 7.B	4.C, 7.A, 7.C, 7.E		1.5	3.3, 3.4, 3.5, 3.6	1.2, 3.1, 3.2, 4.1, 4.4, 5.2	12.0	
11.2	Configuring Windows with Control Panels	Configuring Windows with Control Panels.	7.A	4.C, 7.C, 7.E		1.6		1.1, 3.2, 5.4	12.0	
11.3	System Administration	Use Windows tools and utilities to manage Windows system.	7.A	4.C, 6.H, 7.A, 7.B, 7.C, 7.E		1.5, 1.7	3.5, 3.6	1.3, 1.5, 3.2, 3.3, 4.3, 5.4, 6.2	12.0	
11.4	Command- Line Tools	Use Microsoft Windows command line tools.		4.C, 6.H, 7.C, 7.E		1.4, 4.8		1.5, 6.2	12.0	
11.5	Windows Networking	Configure a Windows computer to work on a network.	7.A, 8.B, 8.C	7.E		1.8, 4.9	3.5	5.1	12.0	5.1, 5.3, 5.10
11.6	Common Preventive Maintenance Techniques for Operating Sytems	Use common preventive maintenance on a computer using Micorsoft Windows tools.	5.E	6.H, 6.K, 6.L, 6.M, 6.O, 7.A, 7.C, 7.E		1.7, 2.6, 4.3, 4.8, 4.9	3.3, 3.6	1.3, 1.5, 3.3, 4.3, 5.4, 6.1, 6.2, 6.3	7.0, 12.0	5.1, 5.2, 5.6, 5.7,
11.7	Basic Troubleshooting for Windows Operating System	Explain how to troubleshoot Microsoft Windows operating system.	1.C, 5.E, 5.F, 7.E	1.E, 3.B, 7.E, 6.F, 6.H, 6.K, 6.L, 6.M, 6.N, 6.O, 7.A, 8.C		1.4, 2.6, 3.2, 4.3, 4.9		3.3, 6.1, 6.2	7.0, 12.0	5.1, 5.2, 5.4, 5.5, 5.7, 5.10

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Chapter 12. Mobile, Linux, and OSX Operating Systems		**Explain how to configure, secure, and troubleshoot mobile, Mac, and Linux operating systems.**	1.A	1.C						
12.1	Mobile Operating Systems	Explain the purpose and characteristics of mobile operating systems.	6.C, 7.D	3.D, 6.N	1.4	1.1			6.0, 12.0	3.2, 3.8
12.2	Methods for Securing Mobile Devices	Explain methods for securing mobile devices.		3.D, 6.O, 7.G	1.6, 1.7	3.4		1.4	12.0	
12.3	Linux and Mac Operating Systems	Explain the purpose and characteristics of Mac and Linux operating systems.		3.D, 6.K, 6.N, 6.O, 7.B, 7.D, 8.B	1.4, 1.6, 1.7	1.9, 3.4			12.0	4.2, 5.7
12.4	Basic Troubleshooting Process for Other Operating Systems	Explain how to troubleshoot other operating systems.	1.C, 5.D, 7.E	1.E, 2.A, 3.B, 6.K, 6.N, 6.O, 8.C	1.5, 1.6, 1.7	1.9, 3.5, 4.3, 4.8, 4.9		1.4	7.0, 12.0	5.2, 5.7
Chapter 13. Security		**Implement basic host, data, and network security.**	1.A	1.C						
13.1	Security Threats	Explain Security Threats		3.B, 3.D		2.1, 2.5	6.1, 6.3		4.0, 8.0, 10.0	2.2,
13.2	Security Procedures	Explain Security Procedures	8.B	3.D, 6.N		2.1, 2.2, 2.7, 2.9, 3.3	6.1, 6.2, 6.3, 6.5		8.0, 10.0	2.2,
13.3	Securing Devices	Configure basic security settings and policies for end devices.	8.B	3.D, 6.N, 6.O, 7.G		2.2, 2.6, 2.7	6.4, 6.5		12.0	2.2,
13.4	Secure Mobile Devices	Explain methods for securing mobile devices.	8.B	3.D, 7.G		2.2, 2.8, 3.5	6.4, 6.5		12.0	2.2,
13.5	Wireless Security	Configure wireless security	8.B	3.D, 7.G	2.3, 5.7	2.3, 2.10	2.8, 6.4, 6.5, 6.6			2.2, 3.7
13.6	Basic Troubleshooting Process for Security	Explain the six steps of the troubleshooting process for security.	1.C, 8.B	1.E, 2.A, 3.B		2.4, 2.6, 2.7, 2.9, 2.10, 3.2, 3.3, 3.5			10.0, 12.0	2.2,
Chapter 14. The IT Professional		**Explain the roles and responsibilities of the IT Professional.**	1.A	1.C						
14.1	Communication Skills and the IT Professional	Explain why good communication skills are a critical part of IT work.	1.B, 1.D, 1.G, 3.A	1.A, 1.B, 1.D, 1.F, 1.I, 6.I, 7.F, 9.A, 9.B		4.1, 4.2, 4.7			1.0, 2.0, 3.0	
14.2	Ethical and Legal Issues in the IT Industry	Explain appropriate behavior when faced with the legal and ethical issues that arise in the IT industry.	1.F, 2.A, 2.B	1.H, 7.F		4.1, 4.2, 4.6			2.0, 4.0	
14.3	Call Center Technicians	Explain the call center environment and technician responsibilities.	1.B, 2.A, 2.B	1.A, 1.B, 1.D, 6.I, 7.F, 9.A, 9.B		4.1, 4.3, 4.7			1.0, 2.0	

130.303. Computer Maintenance (One Credit)

Objectives	ITEv7.0
(a) General requirements. This course is recommended for students in Grades 10-12. Recommended prerequisite: Principles of Information Technology. Recommended corequisite: Computer Maintenance Lab. Students shall be awarded one credit for successful completion of this course.	
(b) Introduction.	
(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.	
(2) The Information Technology (IT) Career Cluster focuses on building linkages in IT occupations for entry level, technical, and professional careers related to the design, development, support, and management of hardware, software, multimedia, and systems integration services.	
(3) In Computer Maintenance, students will acquire knowledge of computer maintenance and creating appropriate documentation. Students will analyze the social responsibility of business and industry regarding the significant issues relating to the environment, ethics, health, safety, and diversity in society and in the workplace as related to computer maintenance. Students will apply technical skills to address the IT industry and emerging technologies.	
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.	
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.	
(c) Knowledge and skills.	
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	
(A) employ effective reading and writing skills.	All
(B) employ effective verbal and nonverbal communication skills.	14.1, 14.3
(C) solve problems and think critically.	4.1, 4.2, 6.2, 7.7, 8.5, 11.7, 12.4, 13.6
(D) demonstrate leadership skills and function effectively as a team member.	14.1
(E) identify and implement proper safety procedures.	1.3, 2.1, 3.5
(F) demonstrate an understanding of legal and ethical responsibilities in relation to the field of IT.	14.2
(G) demonstrate planning and time-management skills such as project management, including initiating, planning, executing, monitoring and controlling, and closing a project.	14.1

Objectives	ITEv7.0
(2) The student identifies various employment opportunities in the IT field. The student is expected to:	
(A) identify job opportunities and accompanying job duties and tasks; and	14.2, 14.3
(B) examine the role of certifications, resumes, and portfolios in the IT profession.	14.2, 14.3
(3) The student applies academic skills to the requirements of computer technologies. The student is expected to:	
(A) demonstrate effective verbal and written communication skills with individuals from varied cultures such as fellow workers, management, and customers.	14.1
(B) interpret appropriate documentation such as schematics, drawings, charts, diagrams, technical manuals, and bulletins.	5.1, 5.2, 5.3, 5.4, 6.1, 6.2
(4) The student acquires an understanding of computer hardware technologies. The student is expected to:	
(A) explain the fundamentals of microprocessor theory.	1.1, 1.2
(B) define the use of Boolean and Binary logic in computer technologies.	1.1
(C) explain the theories of magnetism, electricity, and electronics as related to computer technologies.	1.1
(D) explain proper troubleshooting techniques as related to computer hardware.	1.3, 2.1, 4.1, 4.2
(E) differentiate among digital and analog input and output electronics theory.	1.1, 1.2
(F) explain the relationships relative to data-communications theory.	1.1
(G) describe the architecture of various computer systems.	1.2
(H) describe the function of computer components such as central processing units, storage devices, and peripheral devices.	1.2, 7.1, 7.3
(I) explain computer system environmental requirements and related control devices.	1.2
(J) identify new and emerging technologies that may affect the field of computer technology.	1.1, 1.2
(5) The student uses hardware design, operation, and maintenance knowledge and skills to identify major computer components. The student is expected to:	
(A) identify the purpose and function of computer components in the operation of the computer system such as central processing unit, mother board, sockets, chipsets, basic input and output system and their drivers, memory, hard drive technologies, video cards, input and output devices and ports, and modem and network interface cards (NIC).	1.2
(B) identify how mobile devices such as personal data assistants and cell phones operate.	7.1
(C) identify how mobile devices such as personal data assistants and cell phones connect and share data.	7.3, 7.4, 7.5
(D) demonstrate an understanding of the rationale behind error messages and symptoms of hardware failures.	4.1, 4.2, 8.5, 12.4
(E) research interrupt sequences and beep codes.	11.6, 11.7

Objectives	ITEv7.0
(F) identify priorities and interrupts at the system level.	4.1, 11.7
(6) The student acquires knowledge of operating system design, including operation and maintenance. The student is expected to:	
(A) explain the fundamentals of an operating system;	10.1
(B) compare and contrast different operating systems; and	10.1
(C) identify the operating systems of mobile devices.	12.1
(7) The student acquires knowledge of the theory behind the installation, configuration of software programs, and updates in IT systems. The student is expected to:	
(A) identify the operational features and proper terminology related to computer software systems.	11.1, 11.2, 11.3, 11.5
(B) evaluate application software packages.	10.1, 11.1
(C) verify that software is properly licensed prior to installation.	10.1
(D) differentiate between types of software such as Software as a Service, single-user, per-seat, enterprise, freeware, shareware, and open-source licensing.	10.1, 12.1
(E) explain proper troubleshooting techniques related to computer software.	11.7, 12.4
(8) The student acquires knowledge of the installation and configuration of network connections. The student is expected to:	
(A) explain the fundamentals of network connections and interface requirements.	5.1, 5.2, 5.3, 5.4, 6.1
(B) explain the steps required to install and configure a computer on a network.	6.1, 7.5, 11.5, 13.2, 13.3, 13.4, 13.5
(C) identify the steps to troubleshoot network connectivity.	4.2, 6.2, 11.5

Source: The provisions of this §130.303 adopted to be effective August 28, 2017

130.304. Computer Maintenance Lab (One Credit)

Objectives	ITEv7.0
(a) General requirements. This course is recommended for students in Grades 10-12. Recommended prerequisite: Principles of Information Technology. Corequisite: Computer Maintenance. This course must be taken concurrently with Computer Maintenance and may not be taken as a stand-alone course. Districts are encouraged to offer this course in a consecutive block with Computer Maintenance to allow students sufficient time to master the content of both courses. Students shall be awarded one credit for successful completion of this course.	
(b) Introduction.	
(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.	
(2) The Information Technology (IT) Career Cluster focuses on building linkages in IT occupations for entry level, technical, and professional careers related to the design, development, support, and management of hardware, software, multimedia, and systems integration services.	
(3) In Computer Maintenance Lab, students will acquire knowledge of computer maintenance and creating appropriate documentation. Students will analyze the social responsibility of business and industry regarding the significant issues relating to the environment, ethics, health, safety, and diversity in society and in the workplace as related to computer maintenance. Students will apply technical skills to address the IT industry and emerging technologies.	
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.	
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.	
(c) Knowledge and skills.	
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	
(A) demonstrate work behaviors that enhance employability and job advancement such as regular attendance, promptness, attention to proper attire, maintenance of a clean and safe work environment, appropriate voice, and pride in work.	14.1, 14.3
(B) demonstrate positive personal qualities such as flexibility, open mindedness, initiative, listening attentively to speakers, and willingness to learn new skills.	14.1, 14.3
(C) employ effective reading and writing skills.	All
(D) employ effective verbal and nonverbal communication skills.	14.1, 14.3
(E) solve problems and think critically.	4.1, 4.2, 6.2, 7.7, 8.5, 11.7, 12.4, 13.6
(F) demonstrate leadership skills and function effectively as a team member.	14.1

Objectives	ITEv7.0
(G) identify and implement proper safety procedures.	1.3, 2.1, 3.5
(H) demonstrate an understanding of legal and ethical responsibilities in relation to the field of IT.	14.2
(I) demonstrate planning and time-management skills such as project management, including initiating, planning, executing, monitoring and controlling, and closing a project.	14.1
(2) The student applies academic skills to the requirements of computer technologies. The student is expected to:	
(A) complete work orders for repair and installation.	1.3, 2.1, 4.1, 6.2, 7.7, 8.5, 11.7, 12.4, 13.6
(B) estimate supplies, materials, and labor costs for installation, maintenance, and repair work orders.	1.2, 2.1, 5.3, 5.4, 7.3, 7.6
(C) locate and interpret appropriate documentation such as schematics, drawings, charts, diagrams, technical manuals, and bulletins.	5.1, 5.2, 5.3, 5.4, 6.1, 6.2
(3) The student demonstrates the proper function and application of the tools, equipment, and materials used in computer technologies. The student is expected to:	
(A) demonstrate safe use of equipment in computer technologies such as hand and power tools.	1.3, 2.1
(B) employ available reference documentation such as tools, materials, and Internet sources to access information as needed.	1.3, 2.1, 4.1, 6.2, 7.6, 7.7, 8.5, 11.7, 12.4, 13.1, 13.6
(C) demonstrate proper handling and disposal of environmentally hazardous materials used in computer technologies.	1.3, 2.1, 7.6, 7.7, 8.5
(D) research new and emerging technologies that may affect the field of computer technology.	1.1, 1.2, 9.1, .9.2, 10.1, 12.1, 12.2, 12.3, 13.1, 13.2, 13.3, 13.4, 13,5
(4) The student applies the concepts and skills of the trade in simulated work situations. The student is expected to:	
(A) use electronic test equipment to measure current, voltage, power, and resistance.	3.2
(B) describe digital circuits and bus design.	1.2, 1.3, 7.1, 7.2, 7.3, 7.4

Objectives	ITEv7.0
(C) demonstrate the operational features and proper terminology related to computer systems.	1.2, 1.3, 3.3, 5.1, 5.2, 5.3, 5.4, 7.2, 11.1, 11.2, 11.3, 11.4
(D) demonstrate proper usage of the various components of a computer system such as the central processor, basic input and output system, read-only memory, and random access memory.	1.2, 1.3, 2.1, 7.3
(E) troubleshoot computer peripheral devices.	8.3, 8.4, 8.5
(5) The student uses hardware design, operation, and maintenance knowledge and skills to identify major computer components. The student is expected to:	
(A) assemble and install a basic computer system.	1.3, 2.1
(B) install and configure computer components such as printers and other peripherals.	1.2, 2.1, 8.3, 9.2
(6) The student uses troubleshooting skills to solve client problems. The student is expected to:	
(A) diagnose error messages and symptoms of hardware failures.	1.3, 2.1, 4.1, 7.7, 8.5
(B) research and identify interrupt sequences and beep codes.	2.1, 3.1
(C) identify priorities and interrupts at the system level.	3.1
(D) test a system using diagnostic tools and software.	3.1, 3.3, 4.1
(E) diagnose problems in operating systems.	11.7
(F) differentiate between hardware and software failure.	4.1, 11.7
(G) update Basic Input/Output System (BIOS).	3.1
(H) demonstrate hard drive maintenance procedures such as defrag scan and clear caches.	11.3, 11.4, 11.6, 11.7
(I) gather information from the user.	14.1, 14.3
(J) repair malfunctioning hardware systems.	1.3, 2.1, 3.4, 4.1
(K) reinstall software as needed.	11.6, 11.7, 12.3, 12.4
(L) demonstrate system backup and recovery.	9.2, 11.6, 11.7
(M) restore a system to various states such as safe modes and previous.	11.6, 11.7
(N) demonstrate knowledge of operating system design such as operation and maintenance.	10.1, 11.7, 12.1, 12.3, 12.4, 13.2, 13.3

Objectives	ITEv7.0
(O) apply knowledge of operating system design to perform information support and service tasks of different operating systems.	11.6, 11.7, 12.2, 12.3, 12.4, 13.3
(7) The student installs and configures software programs and updates IT systems. The student is expected to:	
(A) evaluate application software packages and test the functionality of a proposed software configuration.	10.1, 10.2, 11.1, 11.3, 11.6, 11.7
(B) verify software is properly licensed prior to installation.	10.2, 11.3, 12.3
(C) install application and systems software using available resources as needed.	11.1, 11.2, 11.3, 11.4, 11.6
(D) resolve problems with installation if any occur such as recovery from system error.	10.2, 12.3
(E) perform software customization as requested.	11.1, 11.2, 11.3, 11.4, 11.5, 11.6
(F) document all procedures.	14.1, 14.2, 14.3
(G) install and maintain security software.	12.2, 13.3, 13.4, 13.5
(8) The student installs, configures, and verifies active network connection. The student is expected to:	
(A) demonstrate an understanding of network connection and interface requirements.	5.1, 5.2, 5.3, 5.4, 6.1, 6.2
(B) install and configure a computer on a network.	6.1, 10.2, 12.3
(C) verify and troubleshoot network connectivity.	6.2, 11.7, `12.4
(9) The student provides support to computer users to maintain service. The student is expected to:	
(A) develop a written disaster recovery plan.	4.1, 4.2, 14.1, 14.3
(B) develop a written preventive maintenance plan.	4.1, 4.2, 14.1, 14.3

Source: The provisions of this §130.304 adopted to be effective August 28, 2017

A+ Core 1

Objectives	ITEv7.0
1.0 Mobile Devices	
1.1 Given a scenario, install and configure laptop hardware and components.	7.1, 7.2, 7.3, 7.4
1.2 Given a scenario, install components within the display of a laptop.	7.3, 7.4, 7.5, 7.6, 7.7
1.3 Given a scenario, use appropriate laptop features.	7.1, 7.2, 7.3, 7.4, 7.5
1.4 Compare and contrast characteristics of various types of other mobile devices.	12.1, 12.3
1.5 Given a scenario, connect and configure accessories and ports of other mobile devices.	7.6, 7.7, 12.4
1.6 Given a scenario, configure basic mobile device network connectivity and application support.	7.5, 12.2, 12.3, 12.4
1.7 Given a scenario, use methods to perform mobile device synchronization.	9.2, 12.2, 12.3, 13.4
2.0 Networking	
2.1 Compare and contrast TCP and UDP ports, protocols, and their purposes.	5.2
2.2 Compare and contrast common networking hardware devices.	5.3
2.3 Given a scenario, install and configure a basic wired/wireless SOHO network.	6.1, 13.5
2.4 Compare and contrast wireless networking protocols.	5.2, 5.3, 6.1
2.5 Summarize the properties and purposes of services provided by networked hosts.	5.1, 5.2, 5.3
2.6 Explain common network configuration concepts.	5.1, 6.1
2.7 Compare and contrast Internet connection types, network types, and their features.	5.3, 5.4, 6.1
2.8 Given a scenario, use appropriate networking tools.	6.1, 6.2
3.0 Hardware	
3.1 Explain basic cable types, features, and their purposes.	1.2, 1.3, 2.1, 3.2
3.2 Identify common connector types.	1.2, 1.3, 2.1, 3.2
3.3 Given a scenario, install RAM types.	1.2, 1.3, 2.1
3.4 Given a scenario, select, install and configure storage devices.	1.2, 1.3, 2.1, 9.2
3.5 Given a scenario, install and configure motherboards, CPUs, and add-on cards.	1.2, 1.3, 2.1
3.6 Explain the purposes and uses of various peripheral types.	1.2, 1.3, 2.1, 3.3

Objectives	ITEv7.0
3.7 Summarize power supply types and features.	1.2, 1.3, 2.1, 3.2, 3.4
3.8 Given a scenario, select and configure appropriate components for a custom PC configuration to meet customer specifications or needs.	1.2, 2.1, 3.3, 3.4, 3.5
3.9 Given a scenario, install and configure common devices.	1.3, 2.1, 3.3
3.10 Given a scenario, configure SOHO multifunction devices/printers and settings.	3.3, 8.1, 8.2, 8.3, 8.4, 8.5
3.11 Given a scenario, install and maintain various print technologies.	8.1, 8.1, 8.3, 8.4, 8.5
4.0 Virtualization and Cloud Computing	
4.1 Compare and contrast cloud computing concepts.	9.1, 9.2
4.2 Given a scenario, set up and configure client-side virtualization.	9.1, 9.2
5.0 Hardware and Network Troubleshooting	
5.1 Given a scenario, use the best practice methodology to resolve problems.	4.1, 4.2, 6.2
5.2 Given a scenario, troubleshoot problems related to motherboards, RAM, CPUs, and power.	1.2, 1.3, 2.1, 4.1, 4.2
5.3 Given a scenario, troubleshoot hard drives and RAID arrays.	3.3, 4.1, 4.2
5.4 Given a scenario, troubleshoot video, projector, and display issues.	3.3, 3.4, 3.5, 4.1, 4.2
5.5 Given a scenario, troubleshoot common mobile device issues while adhering to the appropriate procedures.	7.3, 7.4, 7.6, 7.7
5.6 Given a scenario, troubleshoot printers.	8.5
5.7 Given a scenario, troubleshoot common wired and wireless network problems.	6.2, 13.5

A+ Core 2

Objectives	ITEv7.0
1.0 Operating Systems	
1.1 Compare and contrast common operating system types and their purposes.	10.1, 12.1
1.2 Compare and contrast features of Microsoft Windows versions.	10.1
1.3 Summarize general OS installation considerations and upgrade methods.	3.1, 10.2
1.4 Given a scenario, use appropriate Microsoft command line tools.	11.4, 11.7
1.5 Given a scenario, use Microsoft operating system features and tools.	11.1, 11.3
1.6 Given a scenario, use Microsoft Windows Control Panel utilities.	11.2
1.7 Summarize application installation and configuration concepts.	11.3, 11.6
1.8 Given a scenario, configure Microsoft Windows networking on a client/desktop.	11.5
1.9 Given a scenario, use features and tools of the Mac OS and Linux client/desktop operating systems.	12.3, 12.4
2.0 Security	
2.1 Summarize the importance of physical security measures.	13.1, 13.2
2.2 Explain logical security concepts.	13.2, 13.3, 13.4
2.3 Compare and contrast wireless security protocols and authentication methods.	13.5
2.4 Given a scenario, detect, remove, and prevent malware using appropriate tools and methods.	13.6
2.5 Compare and contrast social engineering, threats, and vulnerabilities.	13.1
2.6 Compare and contrast the differences of basic Microsoft Windows OS security settings.	11.6, 11.7, 13.3, 13.6
2.7 Given a scenario, implement security best practices to secure a workstation.	13.2, 13.3, 13.6
2.8 Given a scenario, implement methods for securing mobile devices.	13.4
2.9 Given a scenario, implement appropriate data destruction and disposal methods.	13.2, 13.6
2.10 Given a scenario, configure security on SOHO wireless and wired networks.	6.1, 6.2, 13.5, 13.6
3.0 Software Troubleshooting	
3.1 Given a scenario, troubleshoot Microsoft Windows OS problems.	3.1, 11.7
3.2 Given a scenario, troubleshoot and resolve PC security issues.	13.6
3.3 Given a scenario, use best practice procedures for malware removal.	13.2, 13.6
3.4 Given a scenario, troubleshoot mobile OS and application issues.	12.2, 12.3

3.5 Given a scenario, troubleshoot mobile OS and application security issues.	12.4, 13.4, 13.6
4.0 Operational Procedures	
4.1 Compare and contrast best practices associated with types of documentation.	14.1, 14.2, 14.3
4.2 Given a scenario, implement basic change management best practices.	14.1, 14.2
4.3 Given a scenario, implement basic disaster prevention and recovery methods.	11.6, 11.7, 12.4, 14.3
4.4 Explain common safety procedures.	1.3, 2.1, 4.1
4.5 Explain environmental impacts and appropriate controls.	3.2, 3.5
4.6 Explain the processes for addressing prohibited content/ activity, and privacy, licensing, and policy concepts.	14.2
4.7 Given a scenario, use proper communication techniques and professionalism.	14.1, 14.3
4.8 Identify the basics of scripting.	11.4, 11.6, 12.4
4.9 Given a scenario, use remote access technologies.	11.5, 11.6, 11.7, 12.4

IT Fundamentals +

Objectives	ITEv7.0
1.0 IT Concepts and Terminology	
1.1 Compare and contrast notational systems.	1.1
1.2 Compare and contrast fundamental data types and their characteristics.	1.1
1.3 Illustrate the basics of computing and processing.	1.1
1.4 Explain the value of data and information.	1.1
1.5 Compare and contrast common units of measure.	1.1
1.6 Explain the troubleshooting methodology.	4.2
2.0 Infrastructure	
2.1 Classify common types of input/output device interfaces.	1.2, 1.3, 2.1
2.2 Given a scenario, set up and install common peripheral devices to a laptop/PC.	7.2, 7.3
2.3 Explain the purpose of common internal computing components.	1.2, 1.3, 2.1
2.4 Compare and contrast common Internet service types.	5.1, 5.2
2.5 Compare and contrast storage types.	1.2, 1.3, 2.1
2.6 Compare and contrast common computing devices and their purposes.	1.2
2.7 Explain basic networking concepts.	5.1, 5.2, 5.3
2.8 Given a scenario, install, configure and secure a basic wireless network.	6.1, 13.5
3.0 Applications and Software	
3.1 Explain the purpose of operating systems.	10.1
3.2 Compare and contrast components of an operating system.	10.1
3.3 Explain the purpose and proper use of software.	11.1, 11.6
3.4 Explain methods of application architecture and delivery models.	10.1, 11.1
3.5 Given a scenario, configure and use web browsers.	11.1, 11.3, 11.5
3.6 Compare and contrast general application concepts and uses.	11.1, 11.3, 11.6
4.0 Software Development Concepts	
4.1 Compare and contrast programming language categories.	N/A
4.2 Given a scenario, use programming organizational techniques and interpret logic.	N/A
4.3 Explain the purpose and use of programming concepts.	N/A

Objectives	ITEv7.0
5.0 Database Fundamentals	
5.1 Explain database concepts and the purpose of a database.	N/A
5.2 Compare and contrast various database structures.	N/A
5.3 Summarize methods used to interface with databases.	N/A
6.0 Security	
6.1 Summarize confidentiality, integrity and availability concerns.	13.1, 13.2
6.2 Explain methods to secure devices and best practices.	13.2
6.3 Summarize behavioral security concepts.	13.1, 13.2
6.4 Compare and contrast authentication, authorization, accounting and non-repudiation concepts.	13.3, 13.4, 13.5
6.5 Explain password best practices.	13.2, 13.3, 13.4, 13.5
6.6 Explain common uses of encryption.	13.5
6.7 Explain business continuity concepts.	N/A

98-349: MTA: Operating System Fundamentals

Objectives	ITEv7.0
1.0 Understanding operating system configurations	
1.1 Configure Control Panel options	11.2
1.2 Configure desktop settings	11.1
1.3 Configure native applications and tools	11.3, 11.6
1.4 Configure mobility settings	7.5, 12.2, 12.4
1.5 Configure and use management tools	11.3, 11.4, 11.6
2.0 Installing and upgrading client systems	
2.1 Identify Windows operating system editions	10.1
2.2 Identify upgrade paths	10.2
2.3 Understand installation types	10.2
2.4 Understand operating system architecture	10.1
3.0 Managing applications	
3.1 Configure applications Configure User Account Control (UAC)	10.2, 11.1
3.2 Configure antivirus settings	11.1, 11.2, 11.3
3.3 Understand services	11.3, 11.6, 11.7
4.0 Managing files and folders	
4.1 Understand file systems	11.1
4.2 Understand file and print sharing	8.3, 8.4, 11.3, 11.5
4.3 Understand encryption	11.3, 11.6
4.4 Understand libraries	11.1
5.0 Managing devices	
5.1 Connect devices	11.5
5.2 Understand storage	9.1, 11.1
5.3 Understand printing devices	8.1, 8.2
5.4 Understand system devices	11.2, 11.3, 11.6
6.0 Understanding operating system maintenance	
6.1 Understand backup and recovery methods	11.6, 11.7
6.2 Understand maintenance tools	11.3, 11.4, 11.6, 11.7
6.3 Configure updates	11.6

DoD (IT)

Objectives	ITEv7.0
1.0 Demonstrate effective professional communication skills and practices that enable positive customer relationships.	14.1, 14.3
2.0 Use product or service design processes and guidelines to produce a quality information technology (IT) product or service.	1.2, 14.1, 14.2, 14.3
3.0 Demonstrate the use of cross- functional teams in achieving IT project goals.	14.1
4.0 Demonstrate positive cyber citizenry by applying industry accepted ethical practices and behaviors.	13.1, 14.2
5.0 Explain the implications of IT on business development.	1.1
6.0 Describe trends in emerging and evolving computer technologies and their influence on IT practices.	1.1, 1.2, 10.1, 12.1
7.0 Perform standard computer backup and restore procedures to protect IT information.	11.6, 11.7, 12.4
8.0 Recognize and analyze potential IT security threats to develop and maintain security requirements.	13.1, 13.2
9.0 Describe quality assurance practices and methods employed in producing and providing quality IT products and services.	1.1, 1.2
10.0 Describe the use of computer forensics to prevent and solve information technology crimes and security breaches.	13.1 13.2, 13.6
11.0 Demonstrate knowledge of the hardware components associated with information systems.	1.2, 1.3, 2.1, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.5
12.0 Compare key functions and applications of software and determine maintenance strategies for computer systems.	10.1, 10.2, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 12.1, 12.2, 12.3, 12.4, 13.6

DoD (IT-NETS)

Objectives	ITEv7.0
1.0 Analyze customer or organizational network system needs and requirements.	
1.1 Conduct needs analysis.	5.1, 5.2, 5.3, 5.4, 5.5
1.2 Develop networking requirements specifications.	5.1, 5.2, 5.3, 5.4, 5.5
1.3 Analyze requirements/ specifications using current IT approaches.	5.1, 5.2, 5.3, 5.4, 5.5
1.4 Collect data to identify customer/organizational requirements.	5.1, 5.2, 5.3, 5.4, 5.5
2.0 Analyze wired and wireless network systems to determine if they meet specifications (e.g., IEEE, power, security).	
2.1 Analyze the computer site environment.	6.1, 6.2,
2.2 Analyze network security systems.	6.1, 6.2, 13.1, 13.2, 13.3, 13.4, 13.5, 13.6
2.3 Evaluate the correctness and effectiveness of implementing the network system.	5.1, 5.2, 5.3, 5.4, 6.1, 6.2
2.4 Demonstrate knowledge of the basics of network architecture.	5.1, 5.2, 5.3, 5.4, 6.1, 6.2
3.0 Design a network system using technologies, tools and standards.	
3.1 Demonstrate knowledge of basic network classifications and topologies.	5.1, 5.2, 6.1
3.2 Implement common network computing platforms.	6.1, 10.1, 12.1
3.3 Implement appropriate LAN physical media.	5.4, 6.1
3.4 Characterize network connectivity basis and transmission line applications.	5.2, 6.1, 6.2
3.5 Demonstrate knowledge of communication standards for networks.	5.1, 5.2, 5.3, 6.1, 6.2
3.6 Use WAN systems in network development.	5.3, 5.4, 6.1, 6.2
3.7 Implement network security systems.	6.1, 6.2, 13.5
3.8 Characterize the use of Network Operating Systems.	10.1, 12.1
4.0 Perform network system installation and configuration.	
4.1 Install a network infrastructure.	6.1, 6.2
4.2 Configure and install a network operating system.	10.2, 12.3

Objectives	ITEv7.0
5.0 Perform network administration, monitoring and support to maintain a network system.	
5.1 Monitor network performance including information management and infrastructure.	6.1, 6.2, 11.5, 11.6, 11.7
5.2 Demonstrate knowledge of disaster recovery and business continuance.	6.1, 6.2, 11.6, 11.7, 12.4
5.3 Perform network system administration tasks.	6.1, 6.2, 11.5
5.4 Identify various methods of technical support used to maintain and support a network system.	6.1, 6.2, 11.6, 11.7
5.5 Perform technical support duties.	6.1, 6.2, 11.6, 11.7
5.6 Apply software upgrades, service packs and patches.	6.1, 6.2, 11.6
5.7 Perform standard computer backup procedures.	6.1, 6.2, 11.6, 11.7, 12.3, 12.4
5.8 Perform network system maintenance.	6.1, 6.2
5.9 Troubleshoot network system problems.	6.1, 6.2
5.10 Troubleshoot data communications.	6.1, 6.2, 11.5, 11.7