Course Outline

Job Title:
Computer Technician

Career Pathway:
Networking

Industry Sector:
Information and Communication Technologies

O*NET-SOC CODE:
15-1151.00

CBEDS Title:
Network Engineering

CBEDS No.:
4604

74-15-60

A+ Certification/2

Credits: 15   **Hours:** 180

Course Description:
This competency-based course is the second in a sequence of three designed for computer installation, preventive maintenance, networking, security, and troubleshooting. It provides students with project-based experiences in basic computer and peripheral servicing. Technical instruction includes an introduction and reviews of workplace safety policies and procedures as well as employability skills. Emphasis is placed on current Window-based operating systems and software and their operational procedures. The competencies in this course are aligned with the California High School Academic Content Standards and the California Career Technical Education Model Curriculum Standards.

Prerequisites:
Enrollment requires successful completion of the A+ Certification/1 (74-15-50) course.

NOTE: For Perkins purposes this course has been designated as a **concentrator** course.

Meets CompTIA A+ Essentials Certification requirements.

This course cannot be repeated once a student receives a Certificate of Completion.

COURSE OUTLINE COMPETENCY-BASED COMPONENTS

A course outline reflects the essential intent and content of the course described. Acceptable course outlines have six components. (Education Code Section 52506). Course outlines for all apportionment classes, including those in jails, state hospitals, and convalescent hospitals, contain the six required elements:

(EC 52504; 5CCR 10508 [b]; Adult Education Handbook for California [1977], Section 100)

COURSE OUTLINE COMPONENTS	LOCATION

GOALS AND PURPOSES   Cover

The educational goals or purposes of every course are clearly stated and the class periods are devoted to instruction. The course should be broad enough in scope and should have sufficient educational worth to justify the expenditure of public funds.

The goals and purpose of a course are stated in the COURSE DESCRIPTION. Course descriptions state the major emphasis and content of a course, and are written to be understandable by a prospective student.

PERFORMANCE OBJECTIVES OR COMPETENCIES   pp. 7-16

Objectives should be delineated and described in terms of measurable results for the student and include the possible ways in which the objectives contribute to the student's acquisition of skills and competencies.

Performance Objectives are sequentially listed in the COMPETENCY-BASED COMPONENTS section of the course outline. Competency Areas are units of instruction based on related competencies. Competency Statements are competency area goals that together define the framework and purpose of a course. Competencies fall on a continuum between goals and performance objectives and denote the outcome of instruction.

Competency-based instruction tells a student before instruction what skills or knowledge they will demonstrate after instruction. Competency-based education provides instruction which enables each student to attain individual goals as measured against pre-stated standards.

Competency-based instruction provides immediate and continual repetition and In competency-based education the curriculum, instruction, and assessment share common characteristics based on clearly stated competencies. Curriculum, instruction and assessment in competency-based education are: explicit, known, agreed upon, integrated, performance oriented, and adaptive.

COURSE OUTLINE COMPETENCY-BASED COMPONENTS
(continued)

COURSE OUTLINE COMPONENTS	LOCATION

INSTRUCTIONAL STRATEGIES   p. 18

Instructional techniques or methods could include laboratory techniques, lecture method, small-group discussion, grouping plans, and other strategies used in the classroom.

Instructional strategies for this course are listed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructional strategies and activities for a course should be selected so that the overall teaching approach takes into account the instructional standards of a particular program, i.e., English as a Second Language, Programs for Adults with Disabilities.

UNITS OF STUDY, WITH APPROXIMATE HOURS ALLOTTED FOR EACH UNIT   Cover

The approximate time devoted to each instructional unit within the course, as well as the total hours for   pp. 7-16
the course, is indicated. The time in class is consistent with the needs of the student, and the length of
the class should be that it ensures the student will learn at an optimum level.

Units of study, with approximate hours allotted for each unit are listed in the COMPETENCY AREA STATEMENT(S) of the course outline. The total hours of the course, including work-based learning hours (community classroom and cooperative vocational education) is listed on the cover of every CBE course outline. Each Competency Area listed within a CBE outline is assigned hours of instruction per unit.

EVALUATION PROCEDURES   pp. 18-19

The evaluation describes measurable evaluation criteria clearly within the reach of the student. The evaluation indicates anticipated improvement in performances as well as anticipated skills and competencies to be achieved.

Evaluation procedures are detailed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructors monitor students' progress on a continuing basis, assessing students on attainment of objectives identified in the course outline through a variety of formal and informal tests (applied performance procedures, observations, and simulations), paper and pencil exams, and standardized tests.

REPETITION POLICY THAT PREVENTS PERPETUATION OF STUDENT ENROLLMENT   Cover

After a student has completed all the objectives of the course, he or she should not be allowed to reenroll in the course. There is, therefore, a need for a statement about the conditions for possible repetition of a course to prevent perpetuation of students in a particular program for an indefinite period of time.

ACKNOWLEDGMENTS

Thanks to PAUL PIDOUX and MARCELA BAKER for developing and editing this curriculum. Acknowledgment is also given to ERICA ROSARIO for designing the original artwork in the course cover designs. T

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CALIFORNIA CAREER TECHNICAL EDUCATION MODEL CURRICULUM STANDARDS
Information and Communication Technologies Industry Sector
Knowledge and Performance Anchor Standards

1.0 Academics
Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the Information and Communication Technologies academic alignment matrix for identification of standards.

2.0 Communications
Acquire and accurately use Information and Communication Technologies sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

3.0 Career Planning and Management
Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.

4.0 Technology
Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the Information and Communication Technologies sector workplace environment.

5.0 Problem Solving and Critical Thinking
Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the Information and Communication Technologies sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.

6.0 Health and Safety
Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Information and Communication Technologies sector workplace environment.

7.0 Responsibility and Flexibility
Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Information and Communication Technologies sector workplace environment and community settings.

8.0 Ethics and Legal Responsibilities
Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

9.0 Leadership and Teamwork
Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution such as those practiced in the Future Business Leaders of America and SkillsUSA career technical student organization.

10.0 Technical Knowledge and Skills
Apply essential technical knowledge and skills common to all pathways in the Information and Communication Technologies sector, following procedures when carrying out experiments or performing technical tasks.

11.0 Demonstration and Application
Demonstrate and apply the knowledge and skills contained in the Information and Communication Technologies anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through career technical student organizations such as Future Business Leaders of America and SkillsUSA.

Information and Communication Technologies
Pathway Standards

B. Networking Pathway

Students in the Networking pathway prepare for careers that involve network analysis, planning, and implementation, including the design, installation, maintenance, and management of network systems. The successful establishment, maintenance, and securing of information and communication technologies infrastructure is critical to the success of every twenty-first century organization. Employment continues to grow for persons with expertise in networking.

Sample occupations associated with this pathway:
♦ Computer Security Specialist
♦ Network Technician
♦ Network Engineer
♦ Network Administrator
♦ Telecommunication Specialist

B1.0   Identify and describe the principles of networking and the technologies, models, and protocols used in a network.

B2.0   Identify, describe, and implement network media and physical topologies.

B3.0   Install, configure, and differentiate between common network devices.

B4.0   Demonstrate proper network administration and management skills.

B5.0   Demonstrate how to communicate and interpret information clearly in industry-standard visual and written formats.

B6.0   Use and assess network communication applications and infrastructure.

B7.0   Analyze a customer's organizational needs and requirements to identify networking needs.

B8.0   Identify security threats to a network and describe general methods to mitigate those threats.

CBE
Competency-Based Education

COMPETENCY-BASED COMPONENTS
for the <u>A+ Certification/2</u> Course

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

A. INTRODUCTION AND SAFETY
 	
Review, apply, and evaluate classroom and procedures used in accordance with federal, state, and local safety and environmental regulations.
 	
(5 hours)
	1. Review the scope and purpose of the course.
	2. Review the overall course content as a part of the Linked Learning Initiative.
	3. Review classroom police and procedures.
	4. Review classroom and workplace first aid and emergency procedures based on the American Red Cross (ARC) standards.
	5. Review the different occupations in the engineering and design industry sector which have an impact on the role of computer technicians.
	6. Review the opportunities available for promoting gender equity and the representation of non-traditional populations in computer technology.
	7. Review the impact of Environmental Protection Agency (EPA legislation on Engineering and Design Industry Sector practices in protecting and preserving the environment.
	8. Review and demonstrate the procedures for contacting proper authorities for the removal materials based on the EPA standards.
	9. Review and demonstrate the use of the Material Safety Sheet (MSDS) as it applies to the computer technology industry.
	10. Review the provisions of the California Title 24 Energy Efficiency Standards (a.k.a. 2008 California Green building Standards Code) as they relate to the Engineering and Design Industry Sector.
	11. Review the California Occupational Safety and Health Administration (Cal/OSHA) and its laws governing computer technicians.
	12. Review how each of the following insures a safe workplace:
	  a. Employees' rights as they apply to job safety
	  b. Employees' obligations as they apply to safety
	  c. Safety laws applying to electrical tools
	  d. Proper use of static straps and static mats
	13. Pass the safety exam with 100% accuracy.
		Career Ready Practice:
		1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12
		
		CTE Anchor:
		Communications: 2.6
		Career Planning and Management: 3.1, 3.3
		Health and Safety: 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9
		Responsibility and Flexibility: 7.3, 7.7, 7.8
		Ethics and Legal Responsibilities: 8.2
		Leadership and Teamwork: 9.6, 9.8
		Technical Knowledge and Skills: 10.1
		Demonstration and Application: 11.1
		
		CTE Pathway:
		B1.1, B4.1

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

B. OPERATING SYSTEM (OS) AND SOFTWARE
 	
Understand, apply, and evaluate the basics of operating systems and software.
 	
(15 hours)
	1. Identify and describe the following:
	   a. Sidebar
	   b. Windows Aero
	   c. User Account Control (UAC)
	   d. Minimum system requirements
	   e. System limits
	   f. 32bit
	   g. 64bit
	   h. X86
	   i. X64
	   j. Application compatibility, installed program locations (32bit vs. 64bit)
	   k. Windows Explorer
	   l. User interface, star bar layout
	2. Describe and demonstrate the proper use of the following user interfaces:
	   a. Windows Explorer
	   b. My computer
	   c. Control panel
	   d. Command prompt utilities
	     i. Terminal Network (telnet)
	     ii. Ping
	     iii. Internet Protocol Configuration (ipconfig)
	   e. Run line utilities
	     i. Microsoft configuration System Utility (msconfig)
	     ii. Msinfo32
	     iii. Direct X Diagnostics (DXdiag)
	     iv. Cmd
	     v. Registry Edit (REGEDIT)
	   f. My Network Places
	   g. Taskbar/systray
	   h. Administrative Tools
	     i. Performance monitor
	     ii. Event viewer
	     iii. Services
	     iv. Computer management
	   i. Microsoft Management Console (MMC)
	   j. Task Manager
	   k. Start menu
		Career Ready Practice:
		1, 4, 11
		
		CTE Anchor:
		Technology:
		4.1, 4.2
		Technical Knowledge and Skills:
		10.1, 10.3, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10,
		Demonstration and Application:
		11.1, 11.2
		
		CTE Pathway:
		B1.1, B1.2, B1.3, B1.5, B3.1, B3.4, B3.5, B4.1, B4.2, B4.4, B4.5, B6.3

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

C. OS AND SOFTWARE: WINDOWS 2000
 	
Understand, apply, and evaluate the installation, operation, and performance testing techniques used for windows 2000
	1. Identify and describe the features and functions of windows 2000.
	2. Describe and demonstrate the installation and configuration of the following:
	  a. File systems
	    i. File Allocation Table 32 (FAT32)
	    ii. New Technology File System (NTFS)
	  b. Directory structures
	    i. Create folders
	    ii. Navigate directory structures
	  c. Files
	    i. Creation
	    ii. Extensions
	    iii. Attributes
	    iv. Permissions
	3. Describe and demonstrate the verification of hardware compatibility and minimum requirement for windows 2000.
	4. Describe and demonstrate the installation techniques of the following:
	  a. Boot media such as CD or USB
	  b. Network
	  c. Image
	  d. CD recovery
	  e. Factory recovery partition
	5. Describe the following operating system installation options:
	  a. File system type
	  b. Network configuration
	  c. Repair install
	6. Describe and demonstrate the following disk preparation techniques:
	  a. Format drive
	  b. Partition
	  c. Start installation
	7. Describe and demonstrate the following installations techniques for the device manager:
	  a. Verification process
	  b. Installation and updating of device drivers
	  c. Drivers signing
	8. Describe and demonstrate the following techniques:
	  a. User date migration by utilizing the User State Migration Tool (USMT)
	  b. Virtual memory installation and configuration
	  c. Power management configuration
	    i. Suspend
	    ii. Wake on LAN
	    iii. Sleep timers
	    iv. Hibernate
	    v. Standby
	  d. Safe removal of peripherals
		Career Ready Practice:
		1, 3, 4, 5, 10, 11
		
		CTE Anchor:
		Technical Knowledge and Skills:
		10.1, 10.3, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12
		Demonstration and Application:
		11.1, 11.2
		
		CTE Pathway:
		B3.5, B4.5, B6.2, B6.3, B8.1, B8.3, B8.4, B8.5

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

(15 Hours)	9. Describe and demonstrate the basics of boot sequences, techniques, and startup utilities:
	   a. Disk boot order/device priority
	      i. Types of boot devices
	         • Disk
	         • Network
	         • USD
	         • Others
	   b. Boot options
	      ii. Safe mode
	      iii. Boot to restore point
	      iv. Recovery options
	         • Automated System Recovery
	         • Emergency Repair Disk (ERD)
	         • Recovery console
	10. Pass the written Windows 2000 exam with 0% or higher score.	

D. OS AND SOFTWARE: WINDOWS XP PROFESSIONAL
 	
Understand, apply, and evaluate the installation, operation, and performance testing techniques used for windows XP Professional.
	1. Identify and describe the features and functions of Windows XP Professional.
	2. Describe and demonstrate the installation and configuration of the following:
	   a. File systems
	   b. Directory structures
	   c. files
	3. Describe and demonstrate the verification hardware compatibility and minimum requirements for Windows XP Professional
	4. Describe and demonstrate the installation techniques for the following:
	   a. Boot media such as CD or USB
	   b. Network
	   c. Image
	   d. CD recovery
	   e. Factory recovery partition
	5. describe the following operating system installation options:
	   a. file system type
	   b. network configuration
	   c. repair install
	6. describe and demonstrate the following techniques:
	   a. disk preparation order
	   b. device manager
	   c. user date migration by utilizing the User State Migration Tool (USMT)
	   d. virtual memory installation and configuration
	   e. power management configuration
	   f. safe removal of peripherals
		Career Ready Practice:
		1, 3, 4, 5, 11
		
		CTE Anchor:
		Technical Knowledge and Skills:
		10.1, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12
		Demonstration and Application:
		11.1, 11.2
		
		CTE Pathway:
		B3.5, B4.5, B6.3, B8.1, B8.3, B8.4, B8.5

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

(15 hours)	7. describe and demonstrate the following techniques for boot sequences and startup utilities:
	   a. determining disk boot order/device priority
	   b. determining boot options
	8. Pass the written Windows XP Professional exam with 80% or higher score.	

E. OS AND SOFTWARE: WINDOWS XP HOME
 	
Understand, apply, and evaluate the installation, operation, and performance testing techniques used for XP Home
 	
(15 hours)
	1. Identify and describe the features and functions of Windows XP Home.
	2. Describe and demonstrate the installation and configurations of the following:
	   a. File systems
	   b. Directory structures
	   c. file
	3. Describe and demonstrate the verifications of hardware compatibility and minimum requirement for Windows XP Home.
	4. Describe and demonstrate the installation techniques for the following:
	   a. Boot media such as CD or USB
	   b. Network
	   c. Image
	   d. CD Recovery
	   e. Factory recovery partition
	5. Describe the following operations system installation options:
	   a. File system types
	   b. Network configuration
	   c. repair install
	6. Describe and demonstrate the following techniques:
	   a. disk preparation order
	   b. device manager
	   c. user date migration by utilizing the User State Migration Tool (USMT)
	   d. virtual memory installation and configuration
	   e. power management configuration
	   f. safe removal of peripherals
	7. Describe and demonstrate the following techniques for boot sequences and startup utilities:
	   a. determining disk boot order/device priority
	   b. determining boot options
	8. Pass the written XP Home exam with 80% or higher score.
		Career Ready Practice:
		1, 3, 4, 5, 11
		
		CTE Anchor:
		Technical Knowledge and Skills:
		10.1, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12 Demonstration and Application:
		11.1, 11.2
		
		CTE Pathway:
		B3.5, B4.5, B6.3, B8.1, B8.3, B8.4, B8.5

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

F. OS AND SOFTWARE: XP MEDIA CENTER
 	
Understand, apply, and evaluate the installation, operation, and performance testing techniques used for XP MediaCenter.
 	
(15 hours)
	1. Identify and describe the features and functions of Windows XP MediaCenter.
	2. Describe and demonstrate the installation and configurations of the following:
	  a. File systems
	  b. Directory structures
	  c. file
	3. Describe and demonstrate the verifications of hardware compatibility and minimum requirement for Windows XP MediaCenter.
	4. Describe and demonstrate the installation techniques for the following:
	  a. Boot media such as CD or USB
	  b. Network
	  c. Image
	  d. CD Recovery
	  e. Factory recovery partition
	5. Describe the following operations system installation options:
	  a. File system types
	  b. Network configuration
	  c. repair install
	6. Describe and demonstrate the following techniques:
	  a. disk preparation order
	  b. device manager
	  c. user date migration by utilizing the User State Migration Tool (USMT)
	  d. virtual memory installation and configuration
	  e. power management configuration
	  f. safe removal of peripherals
	7. Describe and demonstrate the following techniques for boot sequences and startup utilities:
	  a. determining disk boot order/device priority
	  b. determining boot options
	8. Pass the written XP Media Center exam with 80% or higher score.
		Career Ready Practice:
		1, 3, 4, 5, 11
		
		CTE Anchor:
		Technical Knowledge and Skills:
		10.1, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12
		Demonstration and Application:
		11.1, 11.2
		
		CTE Pathway:
		B3.5, B4.5, B6.3, B8.1, B8.4, B8.5

G. OS AND SOFTWARE: WINDOWS VISTA HOME
 	
Understand, apply, and evaluate the installation, operation, and performance testing techniques used for Windows Vista Home
	1. Identify and describe the features and functions of Window Vista Home.
	2. Describe and demonstrate the installation and configurations of the following:
	  a. File systems
	  b. Directory structures
	  c. file
	3. Describe and demonstrate the verifications of hardware compatibility and minimum requirement for Windows Vista Home.
		Career Ready Practice:
		1, 3, 5, 11
		
		CTE Anchor:
		Technical Knowledge and Skills:
		10.1, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

	4. Describe and demonstrate the installation techniques for the following:
	   a. Boot media such as CD or USB
	   b. Network
	   c. Image
	   d. CD Recovery
	   e. Factory recovery partition
	5. Describe the following operations system installation options:
	   a. File system types
	   b. Network configuration
	   c. repair install
	6. Describe and demonstrate the following techniques:
	   a. disk preparation order
	   b. device manager
	   c. user date migration by utilizing the User State Migration Tool (USMT)
	   d. virtual memory installation and configuration
	   e. power management configuration
	   f. safe removal of peripherals
	7. Describe and demonstrate the following techniques for boot sequences and startup utilities:
	   a. determining disk boot order/device priority
	   b. determining boot options
	8. Pass the written Windows Vista Home exam with 80% or higher score.
		Demonstration and Application:
		11.1, 11.2
		
		CTE Pathway:
		B3.5, B4.5, B6.3, B8.1, B8.3, B8.5

(15 hours)		

H. OS AND SOFTWARE: HOME PREMIUM
 	
Understand and evaluate the installation, operation, and performance testing techniques used for Home Premium.
	1. Identify and describe the features and functions of Home Premium.
	2. Describe and demonstrate the installation and configurations of the following:
	   a. File systems
	   b. Directory structures
	   c. file
	3. Describe and demonstrate the verifications of hardware compatibility and minimum requirement for Home Premium.
	4. Describe and demonstrate the installation techniques for the following:
	   a. Boot media such as CD or USB
	   b. Network
	   c. Image
	   d. CD Recovery
	   e. Factory recovery partition
	5. Describe the following operations system installation options:
	   a. File system types
	   b. Network configuration
	   c. repair install
	6. Describe and demonstrate the following techniques:
	   a. disk preparation order
	   b. device manager
		Career Ready Practice:
		1, 3, 5, 10, 11
		
		CTE Anchor:
		Technical Knowledge and Skills:
		10.1, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12
		Demonstration and Application:
		11.1, 11.2
		
		CTE Pathway:
		B3.5, B4.5, B6.3, B8.1, B8.3, B8.5

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(15 hours)	c. user date migration by utilizing the User State Migration Tool (USMT) d. virtual memory installation and configuration e. power management configuration f. safe removal of peripherals 7. Describe and demonstrate the following techniques for boot sequences and startup utilities: a. determining disk boot order/device priority b. determining boot options 8. Pass the written Home Premium exam with 80% or higher score.	
I. OS AND SOFTWARE: BUSINESS AND ULTIMATE Understand, apply, and evaluate the installation, operation, and performance testing techniques used for Business and Ultimate. (16 hours)	1. Identify and describe the features and functions of Business and Ultimate. 2. Describe and demonstrate the installation and configurations of the following: a. File systems b. Directory structures c. File 3. Describe and demonstrate the verifications of hardware compatibility and minimum requirement for Business and Ultimate. 4. Describe and demonstrate the installation techniques for the following: a. Boot media such as CD or USB b. Network c. Image d. CD Recovery e. Factory recovery partition 5. Describe the following operations system installation options: a. File system types b. Network configuration c. repair install 6. Describe and demonstrate the following techniques: a. disk preparation order b. device manager c. user date migration by utilizing the User State Migration Tool (USMT) d. virtual memory installation and configuration e. power management configuration f. safe removal of peripherals 7. Describe and demonstrate the following techniques for boot sequences and startup utilities: a. determining disk boot order/device priority b. determining boot options 8. Pass the written Business and Ultimate exam with 80% or higher score	**Career Ready Practice:** 1, 3, 5 **CTE Anchor:** Technical Knowledge and Skills: 10.1, 10.5, 10.6, 10.7, 10.8, 10.9, 10.11, 10.12 Demonstration and Application: 11.1, 11.2 **CTE Pathway:** B3.5, B4.5, B6.3, B8.1, B8.3, B8.8

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

J. OPERATIONAL PROCEDURES
 	
Understand, apply, and evaluate the operational techniques used for a computer system.
	1. Describe and demonstrate the appropriate safety and environmental procedures for the following scenarios:
	 a. Electrostatic Discharge (ESD)
	 b. Electromagnetic Interference (EMI)
	   i. Network interference
	   ii. Magnets
	 c. Radio Frequency Interference (RFI)
	   i. Cordless phone interference
	   ii. microwaves
	 d. Electrical safety
	   i. CRT
	   ii. Power supply
	   iii. Inverter
	   iv. Laser printers
	   v. Matching power requirements of equipment with power distribution and Uninterruptible Power Supply/Source (UPS)
	 e. Material Safety Data Sheet (MSDS)
	 f. Cable management – avoiding trip hazard
	 g. Physical safety
	   i. Heavy devices
	   ii. Hot components
	 h. Environmental – proper disposal procedures
	2. Describe and demonstrate the following workplace communications and customer service skills:
	 a. Using proper language – avoid jargon, acronyms, slang
	 b. Maintaining a positive attitude
	 c. Listening and not interrupting a customer
	 d. Being culturally sensitive
	 e. Being punctual (and contacting customer if late)
	 f. Avoiding distractions
	   i. Personal calls
	   ii. Talking to co-workers while interacting with customers
	   iii. Personal interruptions
	 g. Handling difficult customers or situations by:
	   i. Avoiding argument with customers and/or being defensive
	   ii. Not minimizing customers' problems
	   iii. Avoiding judgmental attitude
	   iv. Clarifying customer statements
	     • Asking open-ended questions to narrow the scope of the problem
	     • Restating the issue or question to verify understanding
	 h. Setting and meeting expectations or timeline and communicating status with the customer by:
	   i. Offering different repair or replacement options of applicable
		Career Ready Practice:
		1, 3, 4, 5, 12
		
		CTE Anchor:
		Communications:
		2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8
		Technology:
		4.4
		Problem Solving and Critical Thinking:
		5.6
		Health and Safety:
		6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.9, 6.10
		Responsibility and Flexibility:
		7.7, 7.8
		Ethics and Legal Responsibilities:
		8.1, 8.3, 8.4, 8.5
		Leadership and Teamwork:
		9.6
		
		CTE Pathway:
		B4.2, B4.4, B4.5, B4.6, B4.7, B8.3, B8.4

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS

(50 hours)	ii. Providing proper documentation on the services provided
	    iii. Following up with customers'/user at a later date to verify satisfaction
	    i. Dealing appropriately with customer's confidential materials stored in computers, desktop, printer, etc.
	3. Pass the written Operational Procedures Exam with 80% or higher score.	

K. EMPLOYABILITY SKILLS
 	
Understand, apply, and evaluate the employability skills required in the A + Certification Field.
 	
(5 hours)
	1. Review employer requirements for the following:
	   a. Punctuality
	   b. Attendance
	   c. Attitude toward work
	   d. Quality of work
	   e. Teamwork
	   f. Responsibility
	   g. Timeliness
	   h. Communication skills
	2. Update the list potential employers through traditional and internet sources.
	3. Review the role of social media in job search.
	4. Update sample résumés and cover letters.
	5. Review the importance of filling out a job application legibly, with accurate and complete information.
	6. Review the common mistakes that are made on job applications.
	7. Complete sample job application forms correctly.
	8. Review the importance of enthusiasm in the interview and on a job.
	9. Review the importance of appropriate appearance in the interview and on a job.
	10. Review the importance of the continuous upgrading of job skills.
	11. Review the importance of customer service as a method of building permanent relationship between the organization and the customer.
	12. Review and demonstrate appropriate interviewing techniques.
	13. Review the informational materials and resources needed to be successful in an interview.
	14. Update sample follow-up letters.
	15. Review and demonstrate appropriate follow-up procedures.
		Career Ready Practice:
		1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12
		
		CTE Anchor:
		Communications: 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8
		Career Planning and Management: 3.1, 3.2, 3.4, 3.8
		Technology: 4.5
		
		CTE Pathway:
		B7.1, B7.3

SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES

TEXTBOOKS

Downing, Douglas, PhD., et al. <u>Dictionary of Computer and Internet Terms</u>. Mc-Graw-Hill Companies, Barron's Educational Series, 2009.

Meyers, Michael. <u>CompTIA A+ Certification All-in-One Exam Guide, 7th Edition</u>. Mc-Graw-Hill Companies, 2010.

Microsoft Press Staff. <u>Microsoft Computer Dictionary, 5th Edition</u>. Microsoft Press, 2002.

RESOURCES

Employer Advisory Board members

CTE Foundation Standards
http://www.cde.ca.gov/ci/ct/sf/documents/ctestandards.pdf
http://www.cde.ca.gov/be/st/ss/documents/ctestandards.doc

Computing Technology Industry Association (CompTIA), 1815 S. Meyers Rd., Suite 300, Oakbrook Terrace, IL 60181-5228. Phone: (630) 678-8300. Fax: (630) 268-1384

COMPETENCY CHECKLIST

TEACHING STRATEGIES and EVALUATION

METHODS AND PROCEDURES

A.   Lecture and discussion

B.   Multimedia presentations

C.   Demonstrations and participations

D.   Individualized instruction

E.   Peer teaching

F.   Role-playing

G.   Guest speakers

H.   Field trips and field study experiences

I.   Projects

EVALUATION

SECTION A – Introduction and Safety – Pass the safety test with 100% accuracy.

SECTION B – Operating Systems (OS) and Software – Pass all assignments and exams on operating systems (OS) and software with a minimum score of 80% or higher.

SECTION C – OS and Software: Windows 2000 – Pass all assignments and exams on OS and software: Windows 2000 with a minimum score of 80% or higher.

SECTION D – OS and Software: Windows XP Professional – Pass all assignments and exams on OS and software: Windows XP Professional with a minimum score of 80% or higher.

SECTION E – OS and Software: XP Home – Pass all assignments and exams on OS and software: XP Home with a minimum score of 80% or higher.

SECTION F – OS and Software: XP MediaCenter – Pass all assignments and exams on OS and software: XP MediaCenter with a minimum score of 80% or higher.

SECTION G – OS and Software: Windows Vista Home – Pass all assignments and exams on OS and software: Windows Vista Home with a minimum score of 80% or higher.

SECTION H – OS and Software: Home Premium – Pass all assignments and exams on OS and software: Windows Home Premium with a minimum score of 80% or higher.

SECTION I – OS and Software: Business and Ultimate – Pass all assignments and exams on OS and software: Business and Ultimate with a minimum score of 80% or higher.

SECTION J – Operational Procedures – Pass all assignments and exams on operational procedures with a minimum score of 80% or higher

SECTION K –Employability Skills Review – Pass all assignments and exams on employability skills review with a minimum score of 80% or higher.

Statement for Civil Rights

All educational and vocational opportunities are offered without regard to race, color, national origin, gender, or physical disability.