

# Course Outline

Information and Communication Technologies

REVISED: August/2017

**Job Title:**  
Networking Technician

**Career Pathway:**  
Networking

**Industry Sector:**  
Information and Communication  
Technologies

**O\*NET-SOC CODE:**  
15-1152.00

**CBEDS Title:**  
Network Engineering

**CBEDS No.:**  
4604

**77-65-60**

**Networking/2**

**Credits:** 15

**Hours:** 180

**Course Description:**

This competency-based course is the second in a sequence of two courses designed to prepare students to pass the Interconnecting Cisco Certified Entry Networking Technician (CCENT) examination. Technical instruction includes an introduction, workplace safety principles and procedures, employability skills, and entrepreneurial skills. Emphasis is placed on setting up user accounts and login security, setting up the network file system, managing the file system, file system security, multi-vendor networks, network transmission, network management, setting up network printing, creating login scripts, configuring network applications for users, network fault tolerance, the internet, backing up servers and workstations, performing a simple network installation, and network test review including study guides and simulated online testing. 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 Networking/1 (77-65-50) course.

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

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**

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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**

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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 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.

pp. 7-15

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. 17-18

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 GONZALO PEREZ and BRENDA VELA for developing and editing this curriculum. Acknowledgment is also given to ERICA ROSARIO for designing the original artwork for the course covers.

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# **CALIFORNIA CAREER TECHNICAL EDUCATION MODEL CURRICULUM STANDARDS**

## ***Education, Child Development, and Family Services 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 Education, Child Development, and Family Services academic alignment matrix for identification of standards.

### **2.0 Communications**

Acquire and accurately use Education, Child Development, and Family Services 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 Education, Child Development, and Family Services 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 Education, Child Development, and Family Services 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 Education, Child Development, and Family Services 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 Education, Child Development, and Family Services 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 as practiced in the career technical student organization (FHA-HERO, the California Affiliate of FCCLA).

### **10.0 Technical Knowledge and Skills**

Apply essential technical knowledge and skills common to all pathways in the Education, Child Development, and Family Services 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 Education, Child Development, and Family Services anchor standards, pathway standards, and performance indicators in classroom, laboratory and workplace settings, and through the career technical student organization (FHA-HERO, the California Affiliate of FCCLA).

## ***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 Networking/2 Course**

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>A. INTRODUCTION AND SAFETY</p> <p>Review, apply, and evaluate classroom and workplace policies and procedures used in accordance with federal, state, and local safety and environmental regulations.</p> <p>(5 hours)</p>	<ol style="list-style-type: none"> <li>1. Review the scope and purpose of the course.</li> <li>2. Review the overall course content as a part of the Linked Learning Initiative.</li> <li>3. Review classroom policies and procedures.</li> <li>4. Review classroom and workplace first aid and emergency procedures.</li> <li>5. Review the different occupations in the Information Technology Industry Sector which have an impact on the role networking technicians.</li> <li>6. Review the opportunities available for promoting gender equity and the representation of non-traditional populations in airframe and powerplant technology.</li> <li>7. Review the impact of Environmental Protection Agency (EPA) legislation on the Information Technology Industry Sector practices.</li> <li>8. Review and demonstrate the procedures for contacting proper authorities for the removal of hazardous materials based on the EPA standards.</li> <li>9. Review and demonstrate the use of the Material Safety Data Sheet (MSDS) as it applies to networking technology.</li> <li>10. Review the purpose of the California Occupational Safety and Health Administration (Cal/OSHA) and its laws governing networking technicians.</li> <li>11. Review how each of the following insures a safe workplace:               <ol style="list-style-type: none"> <li>a. employees' rights as they apply to job safety</li> <li>b. employers' obligations as they apply to safety</li> <li>c. safety laws applying to electrical tools</li> </ol> </li> <li>12. Pass the safety test with 100% accuracy.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 7, 8, 9, 12</p> <p><b>CTE Anchor:</b> Communications: 2.4, 2.5, 2.7 Career Planning and Management: 3.4, 3.5 Technology: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6 Health and Safety: 6.1, 6.2, 6.3 Responsibility and Flexibility: 7.3, 7.7, 7.8 Ethics and Legal Responsibilities: 8.1, 8.5 Leadership and Teamwork: 9.2, 9.6 Technical Knowledge and Skills: 10.1, 10.4, 10.14 Demonstration and Application: 11.2</p> <p><b>CTE Pathway:</b> B2.2</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>B. SETTING UP USER ACCOUNTS AND LOGIN SECURITY</p> <p>Understand, apply, and evaluate the ability to set up user accounts and understand login security.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Describe the function of a user object and its property values.</li> <li>2. Create a user object.</li> <li>3. Create and modify user objects with the template object.</li> <li>4. Create user home directories.</li> <li>5. Describe parameters for multiple users.</li> <li>6. Explain how to manage objects by creating, deleting and renaming objects, and by entering and modifying property values.</li> <li>7. Create users.</li> <li>8. List levels and functions of network security.</li> <li>9. Describe and establish login security, including user account restrictions, time restrictions, station restrictions, and intruder detection.</li> <li>10. Pass an examination describing how to create, delete copy, and change users on a network.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.4 Technical Knowledge and Skills: 10.3, 10.8, 10.12</p> <p><b>CTE Pathway:</b> B1.1, B3.1, B3.2, B4.2, B4.8</p>
<p>C. SETTING UP THE NETWORK FILE SYSTEM</p> <p>Understand, apply, and evaluate how to design and set up a network file system for efficient management, use, and storage.</p> <p>(15 hours)</p>	<ol style="list-style-type: none"> <li>1. Compare the hierarchy of files structures.</li> <li>2. Explain the division of disk storage space for the network.</li> <li>3. Identify the meaning of the terms partition and volume.</li> <li>4. Compare the use of FDISK.</li> <li>5. Describe the use of Diskpart.</li> <li>6. Explain how to logically link and extend locations on the local workstation.</li> <li>7. Compare accessing a file system on one server, to accessing the file system across servers.</li> <li>8. Differentiate between physical and logical resources.</li> <li>9. Explain guidelines for planning and creating custom volumes and directories in the network file system.</li> <li>10. List the system-created volumes and directories in the network file system.</li> <li>11. List suggested directories for organizing the file system.</li> <li>12. Demonstrate the strengths and weaknesses of sample directory structures.</li> <li>13. Pass an examination identifying the steps used to design and set up network files.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.4 Technical Knowledge and Skills: 10.1, 10.3, 10.5, 10.8, 10.12, 10.13</p> <p><b>CTE Pathway:</b> B1.1, B3.1, B3.2, B4.2, B4.8</p>
<p>D. MANAGING THE FILE SYSTEM</p> <p>Understand, apply, and evaluate basic file management techniques for managing directory structures, files, and volume space usage.</p>	<ol style="list-style-type: none"> <li>1. Recognize Windows command prompt utilities used to assist working with files and directories on the network.</li> <li>2. Analyze comparable commands in Netware, Linux, and Windows command prompt.</li> <li>3. Compare specific, commonplace, useful utilities for networking operating system.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 5, 10, 11, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(15 hours)	<ol style="list-style-type: none"> <li>4. Explain how to manage the file system directory structure by creating, deleting, renaming, and moving directories.</li> <li>5. Explain how to manage files in the file system by copying, moving, deleting, salvaging, and purging files.</li> <li>6. Explain how to manage the use of volume space by viewing volume usage statistics.</li> <li>7. Pass an examination by demonstrating techniques used to manage directories and folders on a network.</li> </ol>	<p>Technology: 4.4 Technical Knowledge and Skills: 10.5, 10.8, 10.12</p> <p><b>CTE Pathway:</b> B1.1, B3.1, B3.2, B4.2, B4.8, B6.1, B6.3, B7.2, B7.3</p>
<p>E. FILE SYSTEM SECURITY</p> <p>Understand, apply, and evaluate file system security components and the skills needed to plan, implement, and use file system security.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Define the following: <ol style="list-style-type: none"> <li>a. user account</li> <li>b. security groups</li> <li>c. permissions</li> </ol> </li> <li>2. Describe file system security.</li> <li>3. Explain directory and file rights.</li> <li>4. Explain trustee assignments and inheritance.</li> <li>5. Explain security equivalence and effective rights.</li> <li>6. Describe guidelines for planning a directory structure based on security considerations.</li> <li>7. Describe and set directory and file attributes.</li> <li>8. Explain user's effective rights.</li> <li>9. Describe the need for security groups.</li> <li>10. Describe how security groups work.</li> <li>11. Describe differences in permissions for security groups.</li> <li>12. Demonstrate adding and deleting users from different security groups.</li> <li>13. Pass an examination identifying file system security planning and implementation.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 5, 10, 11, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.4 Technical Knowledge and Skills: 10.5, 10.8, 10.12</p> <p><b>CTE Pathway:</b> B1.1, B3.1, B4.8, B6.1, B6.3, B7.2, B7.3, B8.3</p>
<p>F. MULTI-VENDOR NETWORKS</p> <p>Understand, apply, and evaluate the concepts of multi-vendor vs. single vendor operating systems.</p>	<ol style="list-style-type: none"> <li>1. Define the various options to implement a multi-vendor network environment.</li> <li>2. Describe and demonstrate how various operating systems connect to a multi-vendor operating system vs. a single network.</li> <li>3. Compare the differences between centralized and client/server computing.</li> <li>4. Define the client/server networking environment.</li> <li>5. Identify different network operating systems available today.</li> <li>6. Explain how a database management system is used in a client/server environment.</li> <li>7. Pass an examination identifying the various NOS available on the market and their advantages.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.3, 4.5 Technical Knowledge and Skills: 10.5</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(10 hours)		<b>CTE Pathway:</b> B1.1, B2.1, B2.2, B2.3, B3.1, B3.2, B3.7, B4.9
<b>G. NETWORK TRANSMISSION</b>  Understand and evaluate the fundamentals of transmitting across networks.	<ol style="list-style-type: none"> <li>1. Describe WAN transmission, connections, and components.</li> <li>2. Describe the base concepts associated with WANs.</li> <li>3. Understand the differences between analog, distal, and packet switching WAN technologies.</li> <li>4. Identify the uses, benefits, and drawbacks of advanced WAN technologies such as ISDN (Integrated Services Digital Network), ATM (Asynchronous Transfer Mode), Frame Relay, FDDI, and SONET (Synchronous Optical Network).</li> <li>5. Explain how Digital Data Services (DDS) work.</li> <li>6. Identify T1, T2, and T3 lines available for network transmission.</li> <li>7. Describe X.25 WAN links.</li> <li>8. Pass an examination identifying network transmission options.</li> </ol>	<b>Career Ready Practice:</b> 1, 2, 4, 10, 12  <b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.3, 4.5 Technical Knowledge and Skills: 10.5  <b>CTE Pathway:</b> B1.1, B2.1, B2.2, B2.3, B3.1, B3.7, B4.9, B5.2, B6.3
<b>H. NETWORK MANAGEMENT</b>  Understand, apply, and evaluate the ability to manage and troubleshoot a network.	<ol style="list-style-type: none"> <li>1. State the benefits of network management and planning.</li> <li>2. Understand the necessity for network standards, policies and procedures, and documentation.</li> <li>3. Explain how to troubleshoot network problems using a structures approach.</li> <li>4. Describe the types of specialized equipment and other resources that are available for troubleshooting.</li> <li>5. Explain the importance of establishing upgrade guidelines.</li> <li>6. Prepare a contact list, equipment list, network map, server configuration, network hardware configuration, and user administration.</li> <li>7. State the importance of establishing baseline for network performance.</li> <li>8. Use a performance monitor.</li> <li>9. Use a time-domain reflectometer (TDR) to test for breaks in a cable.</li> <li>10. Use a cable tester to test a cable for defects, monitor network collisions, and monitor network congestion.</li> <li>11. Identify systematic steps for troubleshooting network problems.</li> <li>12. Given a problem scenario, select the appropriate next step based on different approaches.</li> <li>13. Pass an examination identifying network management techniques.</li> </ol>	<b>Career Ready Practice:</b> 1, 2, 4, 10, 12  <b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5 Technical Knowledge and Skills: 10.5, 10.12, 10.13  <b>CTE Pathway:</b> B1.1, B2.1, B2.2, B2.3, B3.1, B3.2, B3.7, B4.9, B5.2, B6.3

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>I. SETTING UP NETWORK PRINTING</p> <p>Understand, apply, and evaluate how to set up network printing and perform basic network printing maintenance.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Describe basic components of network printing.</li> <li>2. Explain network printing in the Windows environment.</li> <li>3. Demonstrate setting up Print Queue, Printer, and Print Server Objects.</li> <li>4. Demonstrate setting up printing hardware and connecting a printer through a server or a workstation.</li> <li>5. Explain how printing is regulated.</li> <li>6. Explain the flow of print jobs into and out of a print queue.</li> <li>7. Explain how to manage a print queue.</li> <li>8. Describe how to customize print jobs.</li> <li>9. Pass a quiz identifying steps used to set up a network printer.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5 Technical Knowledge and Skills: 10.5, 10.12</p> <p><b>CTE Pathway:</b> B1.1, B1.5, B3.1, B4.1, B6.1</p>
<p>J. CREATING LOGIN SCRIPTS</p> <p>Understand, apply, and evaluate how to create appropriate login scripts for each user.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Describe types of login scripts.</li> <li>2. Explain how login scripts coordinate at login.</li> <li>3. Explain procedures that should be executed during login.</li> <li>4. Plan login scripts with correct login script command syntax.</li> <li>5. Create, execute, and debug a login script.</li> <li>6. Pass an examination of the steps used to create and save a logon script.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 11, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5 Technical Knowledge and Skills: 10.5, 10.12, 10.13</p> <p><b>CTE Pathway:</b> B1.1, B4.1, B4.9</p>
<p>K. CONFIGURING NETWORK APPLICATIONS FOR USERS</p> <p>Understand, apply, and evaluate how network applications can be managed and launched.</p>	<ol style="list-style-type: none"> <li>1. Describe how to manage network applications using application objects.</li> <li>2. Describe how to launch network applications.</li> <li>3. Use NAL to launch a network application from Windows.</li> <li>4. Pass an examination identifying steps required to manage networked applications.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(10 hours)		Technical Knowledge and Skills: 10.5, 10.12, 10.13  <b>CTE Pathway:</b> B1.1, B4.1, B4.9, B6.1
<b>L. NETWORK FAULT TOLERANCE</b>  Understand, apply, and evaluate the various hard disk protection and recovery options in a network.	<ol style="list-style-type: none"> <li>1. Explain the advantages and disadvantages of disk mirroring.</li> <li>2. Explain and demonstrate disk duplexing.</li> <li>3. Describe and demonstrate disk striping with and without parity.</li> <li>4. Describe and demonstrate tape backup and disk volume set creation.</li> <li>5. Pass an examination on the various hard disk protection options for a network server.</li> </ol>	<b>Career Ready Practice:</b> 1, 2, 4, 10, 12  <b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5 Technical Knowledge and Skills: 10.5, 10.12, 10.13  <b>CTE Pathway:</b> B1.1, B1.4, B1.5, B4.1, B7.2, B8.5
<b>M. THE INTERNET</b>  Understand, apply, and evaluate how to use the Internet for networking.	<ol style="list-style-type: none"> <li>1. Describe the Internet and its resources available to a network administrator.</li> <li>2. Explain how to access resources on the Internet.</li> <li>3. Explain Internet addressing methods.</li> <li>4. Make and use an Internet connection.</li> <li>5. Explain the importance of the following:               <ol style="list-style-type: none"> <li>a. Uniform Resource Locator (URL)</li> <li>b. Domain Name System (DNS)</li> <li>c. Internet Service Provider (ISP)</li> <li>d. Hyper Text Markup Language (HTML)</li> <li>e. Hyper Text Transfer Protocol (HTTP)</li> <li>f. a search engine</li> <li>g. a proxy server</li> </ol> </li> <li>6. Prepare a list of prospective employers and their addresses from the Internet.</li> </ol>	<b>Career Ready Practice:</b> 1, 2, 4, 10, 11, 12  <b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5 Technical Knowledge and Skills: 10.5, 10.12, 10.13  <b>CTE Pathway:</b> B1.1, B1.2, B1.4, B1.6, B3.1, B3.7

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>N. BACKING UP SERVERS AND WORKSTATIONS</p> <p>Understand, apply, and evaluate how to develop a backup strategy for server file systems and workstation file systems.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Compare and contrast backup strategies.</li> <li>2. Describe and demonstrate the process of backing up a server.</li> <li>3. Describe and demonstrate the process of backing up a workstation's file systems.</li> <li>4. Describe and demonstrate the process of restoring file system information.</li> <li>5. Pass an examination identifying network backup strategies and options.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 11, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5 Technical Knowledge and Skills: 10.5, 10.12, 10.13</p> <p><b>CTE Pathway:</b> B1.1, B1.4, B1.5, B4.1, B7.2, B8.5</p>
<p>O. PERFORMING A SIMPLE NETWORK INSTALLATION</p> <p>Understand, apply, and evaluate the steps for Simple Network Installation and complete a NetWare installation.</p> <p>(5 hours)</p>	<ol style="list-style-type: none"> <li>1. Compare the requirements of the Simple and Custom Installation options.</li> <li>2. Identify the major steps for installing network software.</li> <li>3. Perform a server installation using the Simple Installation option.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 11, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5 Technical Knowledge and Skills: 10.5, 10.12, 10.13</p> <p><b>CTE Pathway:</b> B1.1, B1.2, B1.4, B1.6, B3.1, B3.7</p>
<p>P. NETWORK TEST REVIEW SESSIONS WITH STUDY GUIDES AND SIMULATED ONLINE TESTING</p> <p>Understand, apply, and evaluate skills in taking written and simulated tests.</p>	<ol style="list-style-type: none"> <li>1. Review test from study guides with instructor.</li> <li>2. Evaluate test results and prepare for re-testing if necessary.</li> <li>3. Explain importance of time management skills and note taking with Network Test.</li> <li>4. Take a simulated Network Administration Test on-line.</li> <li>5. Prepare for a Network test with individualized lab reviews.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 4, 10, 11, 12</p> <p><b>CTE Anchor:</b> Communications: 2.3, 2.5 Technology: 4.1, 4.2, 4.3, 4.5</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(10 hours)		Technical Knowledge and Skills: 10.5, 10.12, 10.13  <b>CTE Pathway:</b> B1.1, B1.2, B1.4, B1.6, B3.1, B3.7
<b>Q. EMPLOYABILITY SKILLS REVIEW</b>  Review, apply, and evaluate employability skills required in networking.	<ol style="list-style-type: none"> <li>1. Review employer requirements for the following:               <ol style="list-style-type: none"> <li>a. punctuality</li> <li>b. attendance</li> <li>c. attitude toward work</li> <li>d. quality of work</li> <li>e. teamwork</li> <li>f. timeliness</li> <li>g. communication skills</li> <li>h. computer skills and software applications</li> </ol> </li> <li>2. Review list of potential employers through traditional and internet sources.</li> <li>3. Review the role of electronic social networking in job search.</li> <li>4. Finalize sample résumés and cover letters.</li> <li>5. Review the importance of filling out a job application legibly, with accurate and complete information.</li> <li>6. Complete sample job application forms correctly.</li> <li>7. Review the importance of enthusiasm on a job.</li> <li>8. Review the importance of appropriate appearance on a job.</li> <li>9. Review the importance of the continuous upgrading of job skills.</li> <li>10. Review customer service as a method of building permanent relationships between the organization and the customer.</li> <li>11. Review and demonstrate appropriate interviewing techniques.</li> <li>12. Review the informational materials and resources needed to be successful in an interview.</li> <li>13. Finalize sample follow-up letters.</li> <li>14. Review and demonstrate appropriate follow-up procedures.</li> </ol>	<b>Career Ready Practice:</b> 1, 2, 4, 10, 12  <b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.4, 2.5, 2.7 Career Planning and Management: 3.2, 3.3, 3.5 Technology: 4.3, 4.6  <b>CTE Pathway:</b> B4.8, B5.1, B7.1
<b>R. ENTREPRENEURIAL SKILLS</b>  Understand, apply, and evaluate the process involved in becoming an entrepreneur in the networking field.	<ol style="list-style-type: none"> <li>1. Define entrepreneurship.</li> <li>2. Identify the necessary characteristics of successful entrepreneurs.</li> <li>3. State the contributions of entrepreneurs to the networking field.</li> <li>4. Explain the purpose and components of a business plan.</li> <li>5. Examine personal goals prior to starting a business.</li> <li>6. Evaluate sources of monetary investment in a business opportunity.</li> <li>7. State various licensing requirements in the networking business.</li> <li>8. Develop a scenario depicting the student as the networking business owner.</li> </ol>	<b>Career Ready Practice:</b> 1, 2, 4, 10, 11, 12  <b>CTE Anchor:</b> Communications: 2.5 Career Planning and Management: 3.2, 3.3, 3.4, 3.7

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(5 hours)		Technical Knowledge and Skills: 10.12 Demonstration and Application: 11.2, 11.3  <b>CTE Pathway:</b> B5.1

## ***SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES***

### **TEXTBOOKS**

Keitner, JoAnne. Networking Fundamentals: Study Guide (2<sup>nd</sup> ed.). Goodheart-Willcox Co., 2012.

Reid, Allan, and Jim Lorenz. Networking for Home and Small Businesses: CCNA Discovery Learning Guide. Cisco Press, 2008.

Reid, Allen, and Jim Lorenzo. Working at a Small to Medium Business or ISP CCNA Discovery Learning Guide. Cisco Press, 2008.

Roberts, Richard M. Networking Fundamentals . (2<sup>nd</sup> ed). Goodheart-Willcox Co., 2011.

Roberts, Richards. Laboratory Manual Networking Fundamentals (2<sup>nd</sup> ed). Goodheart-Willcox Company, 2011. Print.

### **RESOURCES**

Employer Advisory Board members

#### **CTE MODEL CURRICULUM STANDARDS**

**Fashion and Interior Design Industry Sector**

<http://www.cde.ca.gov/ci/ct/sf/documents/edchildfamily.pdf>

CISCO Systems <http://www.cisco.com/>

CompTIA <http://www.comptia.org/home.aspx>

Institute of Electrical and Electronics Engineers (IEEE) <http://www.ieee.org/index.html>

IEEE Communications Society <http://www.comsoc.org/>

### **COMPETENCY CHECKLIST**

## ***TEACHING STRATEGIES and EVALUATION***

### **METHODS AND PROCEDURES**

- A. Lecture and discussion
- B. Demonstrations and participation
- C. Multimedia presentations
- D. Individualized instruction
- E. Role-playing
- F. Guest speakers
- G. Field trips and field study experiences
- H. Projects

### **EVALUATION**

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

SECTION B – Setting Up User Accounts and Login Security – Pass all assignments and exams on setting up user accounts and login security with a minimum score of 80% or higher.

SECTION C – Setting Up the Network File System – Pass all assignments and exams on setting up the network file system with a minimum score of 80% or higher.

SECTION D – Managing the File System – Pass all assignments and exams on managing the file system with a minimum score of 80% or higher.

SECTION E – File System Security – Pass all assignments and exams on file system security with a minimum score of 80% or higher.

SECTION F – Multi-Vendor Networks – Pass all assignments and exams on multi-vendor networks with a minimum score of 80% or higher.

SECTION G – Network Transmission – Pass all assignments and exams on network transmission with a minimum score of 80% or higher.

SECTION H – Network Management – Pass all assignments and exams on network management with a minimum score of 80% or higher.

SECTION I – Setting Up Network Printing – Pass all assignments and exams on setting up network printing with a minimum score of 80% or higher.

SECTION J – Creating Login Scripts – Pass all assignments and exams on creating login scripts with a minimum score of 80% or higher.

SECTION K – Configuring Network Applications for Users – Pass all assignments and exams on configuring network applications for users with a minimum score of 80% or higher.

SECTION L – Network Fault Tolerance – Pass all assignments and exams on network fault tolerance with a minimum score of 80% or higher.

SECTION M – The Internet – Pass all assignments and exams on the internet with a minimum score of 80% or higher.

SECTION N – Backing Up Servers and Workstations – Pass all assignments and exams on backing up servers and workstations with a minimum score of 80% or higher.

SECTION O – Performing a Simple Network Installation – Pass all assignments and exams on performing a simple network installation with a minimum score of 80% or higher.

SECTION P – Network Test Review Sessions with Study Guides and Simulated Online Testing – Pass all assignments and exams on network test review sessions with study guides and simulated online testing with a minimum score of 80% or higher.

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

SECTION R – Entrepreneurial Skills – Pass all assignments and exams on entrepreneurial skills with a minimum score of 80% or higher.

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Statement for Civil Rights

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

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