# Scope & Sequence

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| Course Name: Networking Lab **PEIMS Code:** 13027410 | | | **Course Credit:** 2.0  **Course Requirements:** Grade Placement 10-12.  **Prerequisite:** None.  **Recommended Prerequisites:** Principles of Information Technology, Computer Maintenance, and Computer Maintenance Lab.  **Corequisite:** Networking. |
| **Course Description:** In Networking Lab, students will develop knowledge of the concepts and skills related to telecommunications and data networking technologies and practices in order to apply them to personal or career development. To prepare for success, students must have opportunities to reinforce, apply, and transfer knowledge and skills to a variety of settings and problems. This course must be taken concurrently with Networking and may not be taken as a stand-alone course. Districts are encouraged to offer this course in a consecutive block with Networking to allow students sufficient time to master the content of both courses. | | | |
| **NOTE 1:** This is a suggested scope and sequence for the course content. This content will work with any textbook or instructional materials. If locally adapted, make sure all TEKS are covered.  **NOTE 2:** This course must be taken concurrently with a corequisite course and may not be taken as a stand-alone course. Districts are encouraged to offer this lab in a consecutive block with the corequisite course to allow students sufficient time to master the content of both courses. Students shall be awarded one credit for successful completion of this course.  **NOTE 3:** Although periods should be adhered to in order to provide students with experience. Completion of skill sets may be demonstrated throughout the practicum and, thus, units do not have to be delivered sequentially. | | | |
| **Total Number of Periods**  **Total Number of Minutes**  **Total Number of Hours** | 175 Periods  7,920 Minutes  132 Hours\* | \*Schedule calculations based on 175/180 calendar days. For 0.5 credit courses, schedule is calculated out of 88/90 days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities, etc. | |
| **Unit Number, Title, and Brief Description** | **# of Class Periods\***  (assumes 45-minute periods)  Total minutes per unit | **TEKS Covered**  **130.306. (c) Knowledge and Skills** | |
| **Unit 1: Career Exploration and Employability**  Students will expand their knowledge base and interest in careers and entrepreneurship opportunities in the field of Information Technology. Students will explore and discuss employment opportunities and industry certifications and requirements in small groups and as a class as they develop individualized career preparation plans. Students will discover and use resources available through Career and Technical Student Organizations (CTSO) or other extracurricular organization(s) to further develop leadership and employability skills. Students will discuss and demonstrate appropriate and proper etiquette and behavior as well as effective listening and speaking skills in this and in all units as they further develop their personal and career goals and increase their interpersonal and employability skills. | 10 of periods  450 of minutes | (1) The student demonstrates the professional standards/employability skills as required by business and industry. The student is expected to:  (A) identify and 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;  (B) identify and demonstrate positive personal qualities such as flexibility, open-mindedness, initiative, listening attentively to speakers, and willingness to learn new knowledge and skills;  (C) employ effective reading and writing skills;  (D) employ effective verbal and nonverbal communication skills;  (E) solve problems and think critically;  (F) demonstrate leadership skills and function effectively as a team member;  (G) identify and implement proper safety procedures;  (H) demonstrate an understanding of legal and ethical responsibilities in relation to the field of IT; and  (I) demonstrate planning and time-management skills such as project management, including initiating, planning, executing, monitoring and controlling, and closing a project.  (2) The student identifies various employment opportunities in the IT field. The student is expected to:  (A) select and research a specific job area with its accompanying duties and tasks;  (B) formulate a personal career plan along with the education, job skills, and experience necessary to achieve career goals; and  (C) develop a resume. | |
| **Unit 2: Technical and Academic Skills in Networking**  Students will expand their knowledge base and interest in customer service through activities that are supportive of a multi-cultural perspective. Students will apply academic skills in all learning activities and apply knowledge through designs that would be represented in a technical support work environment. | 5 periods  225 minutes | (3) The student relates core academic skills to the requirements of telecommunications and data network services. 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;  (B) complete work orders for repair and installation;  (C) estimate supplies, materials, and labor costs on installation, maintenance, and repair work orders; and  (D) interpret technical documentation such as schematics, drawings, charts, diagrams, technical manuals, and bulletins. | |
| **Unit 3: Concepts and Fundamentals of Networking Communications**  Students will engage in opportunities to develop skills in the fundamentals of network communication. Students will participate in skilled and technical hands-on activities that will enhance the understanding and knowledge of computer network communications, protocol languages, and frameworks of communication and troubleshooting. Students will synthesize and demonstrate knowledge in the fundamentals of network by utilizing hands-on skills to properly handle networking equipment. | 50 periods  2,250 minutes | (8) The student knows the function and application of the tools, equipment, technologies, and materials used in telecommunications services. The student is expected to:  (A) demonstrate safe use of equipment commonly employed in telecommunications services such as hand and power tools; and  (B) demonstrate proper handling and disposal of  environmentally hazardous materials used in  telecommunications services. | |
| **Unit 4: Concepts and Fundamentals of Networking Configurations**  Students will engage in opportunities to develop skills in the fundamentals of network configurations. Students will participate in skilled and technical hands-on activities that will enhance the understanding and knowledge of networking troubleshooting and security configurations. Students will synthesize and demonstrate knowledge in the fundamentals of network by utilizing hands-on skills to apply security techniques into network configurations. | 50 periods  2,250 minutes | (7) The student implements network security systems. The student is expected to:  (A) assess potential security threats to information systems;  (B) identify the range of security needs and the problems that can occur on a data network due to security lapses;  (C) define and identify unethical practices such as hacking, phone fraud, online piracy, and data vandalism;  (D) evaluate issues related to privacy, depersonalization, and government control of data communications;  (E) develop and implement a network security plan; and  (F) identify the role that network components such as routers, firewalls, intrusion detection systems, and virtual private networks play in security. | |
| **Unit 5: Concepts and Fundamentals of Networking Applications**  Students will engage in opportunities to develop skills in the application of networking. Students will participate in skilled and technical hands-on activities that will enhance the understanding and knowledge of network logic and addressing. Students will synthesize and demonstrate knowledge in the applications of network by utilizing hands-on skills to properly troubleshoot and implement varying network layouts. | 30 periods  1,350 minutes | (4) The student recognizes and recommends the various types of network components to address industry needs. The student is expected to:  (A) analyze various types and components of networks;  (B) use knowledge of the characteristics of networks to select the optimum configuration for an industry solution; and  (C) recommend data network solutions based on scenario-driven problems.  (6) The student implements a data network plan. The student is expected to:  (A) demonstrate awareness of compatibility and cabling issues;  (B) implement an addressing scheme, including a subnet;  (C) install various types of data connectors and cabling used in computer networking and data communications;  (D) connect various types of data connectors and cabling used in computer networking and data communications;  (E) troubleshoot physical and logical indicators of trouble;  (F) employ a systematic approach to identify a network problem, distinguish between operator or system error, and select the appropriate steps to correct the error;  (G) determine the cause of a problem and select the appropriate corrective action for the network problem; and  (H) maintain a hierarchical structure for the storing and organizing of data on networks. | |
| **Unit 6: Concepts and Fundamentals of Networking Designs and Implementations**  Students will engage in opportunities to develop skills in the design and implementation of networks. Students will participate in skilled and technical hands-on activities that will synthesize and demonstrate knowledge in the networking by utilizing hands-on skills to properly design a private and public networking. Students will create wired and WiFi networks, program routers and switches with proper addressing. | 20 periods  900 minutes | (5) The student develops a network design plan. The student is expected to:  (A) produce necessary documentation required prior to network implementation such as administrative and test accounts, passwords, Internet Protocol addressing, and configurations;  (B) analyze the impact of environmental factors on computer networks;  (C) indicate common peripheral ports and common network components;  (D) develop an addressing scheme, including a subnetting chart;  (E) specify the tools that are commonly used to resolve network equipment problems;  (F) identify vendor testing documentation such as patches, fixes, and upgrades;  (G) demonstrate awareness of standard backup procedures and backup media storage practices;  (H) distinguish between common types of telecommunications and data network cabling;  (I) identify the factors that might affect performance in a network environment such as logic or frequency spectrum interference; and  (J) research new and emerging technologies that may affect the field of telecommunications and data networking services. | |
| **Unit 7: Concepts and Fundamentals of Networking Maintenance**  Students will engage in opportunities to develop skills in the fundamentals of network maintenance. Students will participate in skilled and technical hands-on activities that will enhance the understanding and knowledge of network operations, storage and recovery. Students will synthesize and demonstrate knowledge in the fundamentals of network by utilizing hands-on skills to design a network maintenance plan. | 10 periods  450 minutes | (9) The student provides support to computer users to maintain service. The student is expected to:  (A) develop a written disaster recovery plan; and  (B) develop a written preventive maintenance plan. | |