# Scope & Sequence

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| Course Name: Networking **PEIMS Code:** 13027400 | | | **Course Credit:** 1.0  **Course Requirements:** Grade Placement 10-12.  **Prerequisite:** None.  **Recommended Prerequisites:** Principles of Information Technology, Computer Maintenance, and Computer Maintenance Lab.  **Recommended Corequisite:** Networking Lab. |
| **Course Description:** In Networking, students will develop knowledge of the concepts and skills related to data networking technologies and practices in order to apply them to personal or career development. To prepare for success, students will have opportunities to reinforce, apply, and transfer knowledge and skills to a variety of settings and problems. | | | |
| **NOTE:** 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. | | | |
| **Total Number of Periods**  **Total Number of Minutes**  **Total Number of Hours** | 175 Periods  7920 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**  **130.305. (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 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 periods  450 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) esti mate 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 concepts in the fundamentals of network communication. Students will participate in technical 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 of network terminology by identifying types of networks, communication methods, and types of equipment. | 50 periods  2250 minutes | (4) The student acquires an understanding of telecommunications and data network services. The student is expected to:  (A) explain digital and analog electronics theory;  (B) demonstrate knowledge of binary in relation to Internet Protocol (IP) addressing;  (C) distinguish the differences between a data packet and voice communications;  (D) define the layers and functions of the Open System Interconnection model;  (E) explain Transport Control Protocol and IP fundamentals, including subnetting;  (F) distinguish between public and private networks;  (G) describe the standards and operations of wireless technologies in telecommunications and data networks;  (H) differentiate between types of networks;  (I) identify national standards for data communication; and  (J) identify the potential benefits and problems for the future of telecommunications and data networking. | |
| **Unit 4: Concepts and Fundamentals of Networking Configurations**  Students will engage in opportunities to develop concepts in the fundamentals of network configurations. Students will participate in technical activities that will enhance the understanding and knowledge of computer network configurations, networking operating system framework and communication, connection types, and applications of communication and troubleshooting. Students will synthesize and demonstrate knowledge of network terminology by identifying types of networks, components and connections types. | 50 periods  2250 minutes | (5) The student analyzes various types of configurations and upgrading. The student is expected to:  (A) demonstrate understanding of components of telecommunications and data networks;  (B) identify major network operating systems;  (C) distinguish between different types of cables used in the telecommunications and data networking;  (D) describe telecommunications and data networking media and connectors;  (E) differentiate among computer network topologies;  (F) explain the distinction between connectionless and connection transport;  (G) explain the use of Transport Control Protocol and IP utilities;  (H) explain how to test, validate, and troubleshoot IP connectivity; and  (I) identify good practices to ensure network security. | |
| **Unit 5: Concepts and Fundamentals of Networking Applications**  Students will engage in opportunities to develop concepts in the application of networking. Students will participate in technical activities that will enhance the understanding and knowledge of how networks are utilized in industry. Students will synthesize and demonstrate knowledge of the application of networking by identifying the implementation of networking in a professional network setting. | 30 periods  1350 minutes | (6) 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; and  (B) analyze the characteristics of networks to select the optimum configuration for an industry solution. | |
| **Unit 6: Concepts and Fundamentals of Networking Designs and Implementations**  Students will engage in opportunities to develop concepts in the design and implementation of networks. Students will participate in technical activities that will enhance the understanding and knowledge of network planning and design, usage of networking components, and practical networking operations. Students will synthesize and demonstrate knowledge of networking by designing a custom network. | 20 periods  900 minutes | (7) The student develops a network design plan. The student is expected to:  (A) produce planning documentation required prior to network implementation;  (B) explain the impact of environmental factors on computer networks;  (C) identify common peripheral ports and common network components such as hubs, routers, and switches;  (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 standard backup procedures and backup media storage practices; and  (H) identify the factors that might affect performance in a network environment such as logic or frequency spectrum interference. | |
| **Unit 7: Concepts and Fundamentals of Networking Maintenance**  Students will engage in opportunities to develop concepts in the fundamentals of networking maintenance. Students will participate in technical activities that will enhance the understanding and knowledge of network operations, storage and recovery. Students will synthesize and demonstrate knowledge of networking maintenance by designing network maintenance plans. | 10 periods  450 minutes | (8) 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. | |