# Scope & Sequence

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| Course Name: Computer Maintenance Lab **TSDS PEIMS Code:** 13027310 | | | **Course Credit:** 2.0  **Course Requirements:** Grade Placement 10-12.  **Prerequisite:** None.  **Recommended Prerequisite:** Principles of Information Technology.  **Corequisite:** Computer Maintenance. |
| **Course Description:** In Computer Maintenance Lab, students will acquire knowledge of computer maintenance and creating appropriate documentation. Students will analyze the social responsibility of business and industry regarding the significant issues relating to the environment, ethics, health, safety, and diversity in society and in the workplace as related to computer maintenance. Students will apply technical skills to address the IT industry and emerging technologies. This course must be taken concurrently with Computer Maintenance and may not be taken as a stand-alone course. Districts are encouraged to offer this course in a consecutive block with Computer Maintenance to allow students sufficient time to master the content of both courses. | | | |
| **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**  **130.303. (c) Knowledge and Skills** | |
| **Unit 1: Employability Skills**  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 Computer and Technology 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. Students will participate in group activities to enhance intellectual property law, copyright, trademarks, patents and violation of these laws. Students will discuss and demonstrate knowledge of computer threats into hacking, piracy and data vandalism. | 10 of periods  450 of minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (A) demonstrate work behaviors that enhance employability and job advancement such as regular attendance, promptness, attention to proper attire, maintenance of a clean and safe work environment, appropriate voice, and pride in work;  (B) demonstrate positive personal qualities such as flexibility, open mindedness, initiative, listening attentively to speakers, and willingness to learn new 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. | |
| **Unit 2: Customer Service and Academic Skills**  Students will expand their knowledge base and interest in customer service through skills based 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 | (2) The student applies academic skills to the requirements of computer technologies. The student is expected to:  (A) complete work orders for repair and installation;  (B) estimate supplies, materials, and labor costs for installation, maintenance, and repair work orders; and  (C) locate and interpret appropriate documentation such as schematics, drawings, charts, diagrams, technical manuals, and bulletins. | |
| **Unit 3: Concepts and Fundamentals of Computer Hardware**  Students will engage in opportunities to develop concepts in computer hardware. Students will participate in technical activities that will enhance the understanding and knowledge of computer hardware components and proper tool usage. Students will synthesize and demonstrate knowledge of computer hardware concepts by utilizing hands-on skills in assembling a computer and installing peripherals. | 40 periods  1,800 minutes | (3) The student demonstrates the proper function and application of the tools, equipment, and materials used in computer technologies. The student is expected to:  (A) demonstrate safe use of equipment in computer technologies such as hand and power tools;  (B) employ available reference documentation such as tools, materials, and Internet sources to access information as needed;  (C) demonstrate proper handling and disposal of environmentally hazardous materials used in computer technologies; and  (D) research new and emerging technologies that may affect the field of computer technology.  (4) The student applies the concepts and skills of the trade in simulated work situations. The student is expected to:  (A) use electronic test equipment to measure current, voltage, power, and resistance;  (B) describe digital circuits and bus design;  (C) demonstrate the operational features and proper terminology related to computer systems;  (D) demonstrate proper usage of the various components of a computer system such as the central processor, basic input and output system, read-only memory, and random access memory; and  (E) troubleshoot computer peripheral devices.  (5) The student uses hardware design, operation, and maintenance knowledge and skills to identify major computer components. The student is expected to:  (A) assemble and install a basic computer system; and  (B) install and configure computer components such as printers and other peripherals. | |
| **Unit 4: Concepts and Fundamentals of Computer Maintenance and Troubleshooting**  Students will engage in opportunities to develop concepts in computer maintenance and troubleshooting. Students will participate in skilled and technical hands-on activities that will enhance the understanding and knowledge of the functions computer hardware components, and mobile technology and diagnose and solve issues that arise. Students will synthesize and demonstrate knowledge of computer maintenance and troubleshooting by utilizing hands-on skills in computer system repair. | 40 periods  1,800 minutes | (6) The student uses troubleshooting skills to solve client problems. The student is expected to:  (A) diagnose error messages and symptoms of hardware failures;  (B) research and identify interrupt sequences and beep codes;  (C) identify priorities and interrupts at the system level;  (D) test a system using diagnostic tools and software;  (E) diagnose problems in operating systems;  (F) differentiate between hardware and software failure;  (G) update Basic Input/Output System (BIOS);  (H) demonstrate hard drive maintenance procedures such as defrag scan and clear caches;  (I) gather information from the user;  (J) repair malfunctioning hardware systems;  (K) reinstall software as needed;  (L) demonstrate system backup and recovery;  (M) restore a system to various states such as safe modes and previous;  (N) demonstrate knowledge of operating system design such as operation and maintenance; and  (O) apply knowledge of operating system design to perform information support and service tasks of different operating systems. | |
| **Unit 5: Concepts and Fundamentals of Computer Operating Systems**  Students will engage in opportunities to develop concepts in computer operating systems. Students will participate in skilled and technical hands-on activities that will enhance the understanding and knowledge of the differences in operating systems, including mobile technology. Students will synthesize and demonstrate knowledge of computer operating systems by utilizing hands-on skills in operating system installation and configuration. Students will install various operating systems including Windows and Linux. | 30 periods  1,350 minutes | (7) The student acquires knowledge of the theory behind the installation, configuration of software programs, and updates in IT systems. The student is expected to:  (A) identify the operational features and proper terminology related to computer software systems;  (B) evaluate application software packages;  (C) verify that software is properly licensed prior to installation;  (D) differentiate between types of software such as Software as a Service, single-user, per-seat, enterprise, freeware, shareware, and open-source licensing; and  (E) explain proper troubleshooting techniques related to computer software. | |
| **Unit 6: Concepts and Fundamentals of Computer Application Installation and Configuration**  Students will engage in opportunities to develop concepts in computer applications and software. Students will participate in skilled and technical hands-on activities that will enhance the understanding and knowledge of the differences between operating system programs and application software. Students will synthesize and demonstrate knowledge of computer applications by utilizing hands-on skills in software installation and configuration. Students will troubleshoot, plan and develop a means for system maintenance and licensing. | 30 periods  1,350 of minutes | (7) The student acquires knowledge of the theory behind the installation, configuration of software programs, and updates in IT systems. The student is expected to:  (A) identify the operational features and proper terminology related to computer software systems;  (B) evaluate application software packages;  (C) verify that software is properly licensed prior to installation;  (D) differentiate between types of software such as Software as a Service, single-user, per-seat, enterprise, freeware, shareware, and open-source licensing; and  (E) explain proper troubleshooting techniques related to computer software.  (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. | |
| **Unit 7: Concepts and Fundamentals of Computer Networking**  Students will engage in opportunities to develop concepts in computer networking. Students will participate in skilled and technical hands-on activities that will enhance the understanding and knowledge of the differences in networking connections and network configurations. Students will synthesize and demonstrate knowledge of computer networking by utilizing hands-on skills in connecting a network, programming basic routing and network troubleshooting. | 20 periods  900 of minutes | (8) The student installs, configures, and verifies active network connection. The student is expected to:  (A) demonstrate an understanding of network connection and interface requirements;  (B) install and configure a computer on a network; and  (C) verify and troubleshoot network connectivity. | |