IT C110: COMPUTER HARDWARE AND SOFTWARE (A+ ESSENTIALS)

Item	Value
Curriculum Committee Approval Date	12/06/2024
Top Code	070800 - Computer Infrastructure and Support
Units	4 Total Units
Hours	72 Total Hours (Lecture Hours 72)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

Formerly: A+ Essentials. This course prepares students with the necessary competencies for an entry-level Information Technology career, such as IT Help Desk and IT Technician. Topics include personal computer components, operating systems, computer networks, computer peripherals, and basic security concepts. Lecture and hands-on experience in structured labs are included. This course aligns with the exam objectives of CompTIA's A+ Essentials Hardware and A+ Essentials Software. ADVISORY: CIS C111 or IT C104. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Design and implement hardware and software documentation.
2. Demonstrate proper safety procedures for computer disassembly and reassembly.
3. Configure an operating system for network connectivity, including Domain Name System (DNS), Gateway, IP address (Internet Protocol address) configuration.
4. Given a scenario, apply the troubleshooting methodology to properly and safely evaluate, diagnose, and mediate hardware and software issues.

Course Objectives

- 1. Describe methods for installation and configuration of personal computer components and their related software.
- 2. Explain how to install, configure, and troubleshoot peripherals, storage, components, drivers, and operating system utilities.
- 3. Provide demonstration of how to configure and troubleshoot issues such as those related to connectivity, booting, application access, and power.
- 4. Outline the troubleshooting methodology in order to safely diagnose, resolve, and document common hardware and software issues.

Lecture Content

Installing and Configuring PC Components Use Appropriate Safety Procedures PC Components Common Connection Interfaces Install Peripheral Devices Troubleshooting Methodology Installing, Configuring, and Troubleshooting Display and Multimedia Devices Install and Configure Display Devices Troubleshoot Display Devices Install and Configure Multimedia Devices Installing, Configuring, and Troubleshooting Storage Devices Install System Memory Install and Configure Mass Storage Devices Install and Configure Removable Storage Configure RAID Troubleshoot Storage Devices Installing, Configuring, and Troubleshooting Internal System Components Install and Upgrade CPUs Configure and Update BIOS/UEFI Install Power Supplies Troubleshoot Internal System Components Configure a Custom PC Network Infrastructure Concepts Wired Networks Network Hardware Devices Wireless Networks Internet Connection Types Network Configuration Concepts Network Services Configuring and Troubleshooting Networks Configure Network Connection Settings Install and Configure SOHO Networks Configure SOHO Network Security Configure Remote Access Troubleshoot Network Connections Install and Configure IoT Devices Implementing Client Virtualization and Cloud Computing Configure Client-Side Virtualization Cloud Computing Concepts Supporting and Troubleshooting Laptops Use Laptop Features Install and Configure Laptop Hardware Troubleshoot Common Laptop Issues Supporting and Troublesho oting Mobile Devices Mobile Device Types Connect and Configure Mobile Device Accessories Configure Mobile Device Network Connectivity Support Mobile Apps Installing, Configuring, and Troubleshooting Print Devices Maintain Laser Printers Maintain Inkjet Printers Maintain Impact, Thermal, and 3D Printers Install and Configure Printers Troubleshoot Print Device Issues Install and Configure Imaging Devices Supporting Operating Systems Identify Common Operating Systems Use Windows Features and Tools Manage Files in Windows Manage Disks in Windows Manage Devices in Windows Installing, configuring, and maintaining operating systems Configure and use Linux Configure and use MacOS Install and upgrade operating systems Maintain operating systems Maintaining and troubleshooting Microsoft Windows Install and manage Windows applications Manage Windows performance Troubleshoot Windows Configuring and troubleshooting networks Configure network connection settings Install and configure SoHo networks Configure SoHo network security Configure remote access Troubleshoot network connections Managing users, workstations, and shared resources Manage users Configure shared resources Configure Active Directory accounts and policies Security Concepts Logical security concepts Threats and vulnerabilities Physical security measures Securing workstations and data Implement security best practices Implement data protection policies Protect data during incident response Troubleshooting workstation security issues Detect, remove, and prevent malware Troubleshoot common workstation security issues Supporting and troubleshooting mobile devices Secure mobile devices Troubleshoot mobile device issues Implement operational procedures Use appropriate safety procedures Understand environmental impacts and their controls Create and maintain documentation Use basic change management best practices Implement disaster prevention and recovery procedures Use basic scripting concepts Understand professionalism and best practice in communications with customers

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

This course will utilize a combination of lecture, remote virtual machine lab assignments, classroom discussion with student interactions, problem-solving techniques, quizzes, exams, and troubleshooting assignments to achieve the goals and objectives of this course. All instructional methods are consistent across all modalities.

Reading Assignments

Weekly reading assignments will be given from the required text or online materials provided by web links via the instructor.

Writing Assignments

Written assignments may include discussion forum posts and short essay responses.

Out-of-class Assignments

Out of class assignments will cover lab reports, discussion questions, and assignments related to PC maintenance, configuration, and hardware replacement and installation. Students will use a remote lab environment to complete the following assignments: Personal Computer (PC) Hardware Procurement Installation Configuration Personal Computer (PC) Software Installation Configuration

Demonstration of Critical Thinking

Assessments will consist of quizzes, tests, hands-on lab exercises, and discussion questions.

Required Writing, Problem Solving, Skills Demonstration

There is a skills portion on the final exam. Students will demonstrate the ability to disassemble a working computer and reassemble it to the same working state.

Eligible Disciplines

Computer information systems (computer network installation, microcomputer ...: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience. Computer service technology: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Andrews, Jean; Dark, Joy; West, Jill. CompTIA A+ Guide to IT Technical Support , 10th ed. ISBN: 978-0357108291: Cengage, 2020

Other Resources

1. Coastline Library 2. White papers, security reports, and articles are available at no charge to all students at multiple sites as recommended by the instructor.