

CHT A110: PC CONCEPTS: A+ CERTIFICATION PREPARATION

Item	Value
Curriculum Committee Approval Date	10/20/2021
Top Code	070820 - Computer Support
Units	4 Total Units
Hours	90 Total Hours (Lecture Hours 63; Lab Hours 27)
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)

Course Description

Introduces the hardware and operating system concepts of a personal computer and the broad range of hardware and software technologies. Provides preparation for students seeking A+ Certification sponsored by the Computing Technology Industry Association and certifies the competency of entry-level service technicians in the computer industry. Enrollment Limitation: IT A110; students who complete CHT A110 may not enroll in or receive credit for IT A110. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Configure a computer's BIOS settings.
2. Install and configure a computer's operating system and device drivers.
3. Install and configure a peer-to-peer network environment.

Course Objectives

- 1. Identify the hardware components of a personal computer
- 2. Explain the operations and interactions of the hardware components
- 3. Analyze and configure the computer for different hardware and software conditions.
- 4. Analyze and diagnose computer performance and operational conditions.
- 5. Compare and contrast computer upgrade options and analyze and calculate financial alternatives
- 6. Recognize and explain preventive maintenance processes
- 7. Analyze and apply principles of Windows configurations
- 8. Analyze and apply principles of application and utility configurations.
- 9. Recognize and explain the use of diagnostic utilities.
- 10. Diagnose and apply configuration changes to personal computers
- 11. Recognize and apply appropriate safety procedures
- 12. Compare and contrast different methods of technician-to-user interaction.

Lecture Content

Introduction to PC Concepts Course scope and outline Concepts and theories Identification, orientation, and operation of system boards Identification, orientation, and operation of internal and external components Configuration Modular concepts and applications FRU, Field Replaceable Unit, identification FRU operation processes Connectivity and installation Tools and methods Observation of performance and operation Analysis of performance and operation Transportation of computers Component installation and upgrades Software installation and upgrades Hardware installation and upgrades Performance analysis and enhancements Diagnosis and troubleshooting Logical troubleshooting methods Symptom analysis and interpretation Troubleshooting software installation and upgrades Troubleshooting hardware installation and upgrades Troubleshooting peripheral component installation and upgrades Proper interpretation of hardware vs. software problems Repairs Generic repair processes Specific repair processes for internal and external components Precautions and safety methods Safety ESD, electro-static-discharge , precautions, and tools Environmental hazards and protection from and to components Hazards working with peripheral devices, monitors, printers, etc. Upgrades and installation of system components Compatibility of system components Upgrade methods Diagnosis and troubleshooting of system software Boot methods and troubleshooting Working with computer users Determining user needs Solving user problems Preventive maintenance Cleaning and configuration of components Backup methods File management, repair, and defragmentation Operating systems concepts and operations Types of operating systems Understanding and using the GUI Interface Installing and configuring operating systems Installing and configuring applications and utilities Maintaining and troubleshooting operating systems in the field Configuring simple networks Test methods Certificate exam taking methods

Lab Content

BIOS Configurations In this lab students will collect information about the computer from the BIOS. Configuring Windows In this lab students will prepare the configuration options for the Windows operating system. After they prepare the options, they will perform the configuration on the Windows computer. Windows Control Panel Explore and use control panel applets. Windows Management and Administrative Tools Accessing Microsoft Management Console, Task Scheduler, Disk Manager, and Registry Settings. Modifying registry. Configure Network Settings In this lab students will review and configure static and dynamic IP settings on a Windows computer. Setup Windows File Sharing In this lab students will configure two windows computers to allow for sharing files. The students will need to create users and assign file security. Setup Windows Printer Sharing In this lab students will configure a network printer on a computer, configure printer sharing and then connect to the printer from a second computer through the printer's "share". Configure Wired and Wireless Networks In this lab students will setup a small network that is typical of what would be found in a small office. The students will use both wired and wireless networking technologies. Windows User Accounts and Groups Create and manage user accounts and groups. Configure Local Group Policies. Disk Maintenance and Data Recovery Running and configuring disk cleanup utilities, defragmentation and Windows backup processes. Managing Storage In this lab students will install and configure RAID storage solutions. Working with Command Line (Windows and Linux) Using command line interface in Windows and Linux to browse and create files and directories. Troubleshooting Windows Use troubleshooting tools such as action center, task manager, event viewer and system configuration utility. Remote Access Configuring and using RDP as well as a third-party remote access utility. Installing

Software Install several different software solutions in Window and Linux. Security and Privacy In this lab student will managing network security. This will involve firewall, encryption, malware, and advanced security configuration. Virtual Machine Configuration In this lab students will configure a virtual machine and install an operating system. Basic Scripts Create Windows Batch file, PowerShell script, Linux BASH script.

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

1. Lecture and application of ideas 2. Use of computers to demonstrate processes and methods 3. Homework assignments 4. Group discussions

Reading Assignments

Students will spend a minium of 4 hours per week reading from the assigned textbook and other online resources.

Writing Assignments

Student performance on exams including essays, quizzes and homework assignments will be used to determine proficiency. This course will be oriented toward a practical and hands-on approach to the subject. Homework assignments will consist of writing and analysis opportunities.

Out-of-class Assignments

Students will spend a minium of 4 hours per week performing skills enhancement exercises, homework as well as test preparation.

Demonstration of Critical Thinking

Practical computer projects, labs, quizzes and exams consisting of multiple choice, essay, true false, and fill-in questions.

Required Writing, Problem Solving, Skills Demonstration

Student performance on exams including essays, quizzes and homework assignments will be used to determine proficiency. This course will be oriented toward a practical and hands-on approach to the subject. Homework assignments will consist of writing and analysis opportunities.

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 Meyers, Mike. ComptTIA A+ Guide to Managing and Maintaining Your PC, 6th ed. Boston: McGraw Hill Higher Education, 2019