IT A110: PC CONCEPTS: A+ CERTIFICATION PREPARATION

Item	Value
Curriculum Committee Approval Date	12/02/2020
Top Code	070820 - Computer Support
Units	4 Total Units
Hours	90 Total Hours (Lecture Hours 54; Lab Hours 36)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

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: CHT A110; students who complete IT A110 may not enroll in or receive credit for CHT A110. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Disassemble and reassemble desktop computers.
2. Configure a computer's BIOS settings.
3. Install and configure a computer's operating system and device drivers.
4. 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

Build a Computer:In this lab students will disassemble and reassemble a computer. They will also identify various components and technologies that are found in the computer.BIOS Configurations:In this lab students will collect information about the computer from the BIOS.Installing and Configuring Windows:In this lab students will be performing the basic installation of different versions of Windows.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 the 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 printers "share".Assemble and Test an Ethernet Cable:In this students will assemble and test an Ethernet patch cable.Build a Structured Wiring Infrastructure:In this lab students will build a small structured wiring infrastructure.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.Install and Configure a Network Attached Storage Server:In this lab students will create a small network environment with a Network Attached Storage server.

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 bachelors degree and two years of professional experience, or any associate degree and six years of professional experience. Computer service technology: Any bachelors 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, 4th ed. Boston: McGraw Hill Higher Education, 2013