

COURSE DESCRIPTION

Supporting Desktop Systems

Course Description

IN 106. Supporting Desktop Systems. 3 hours credit. This course will enable the student to demonstrate an ability to install, configure, and repair desktop computer systems. This course is designed for those anticipating a career in computer or network support or for those seeking professional certification.

Course Relevance

The theories and methods learned in this course prepare the student to install computer software and perform basic computer maintenance and repair. The principles covered in this course are relevant to basic computer maintenance and repair. The skills developed prepare the student with a basic understanding of computer support tasks and prepare the student for advanced study in computer and network support.

Required Materials

Andrews, J. (2008). *COMP TIA A+ guide to managing and maintaining your pc* (6th ed.). Boston, MA: Course Technology, CENGAGE Learning

Supplemental materials

22-piece toolset electrostatic discharge (ESD) strap or equivalent
Tool set for A+PC repair (optional)

Learning Outcomes

The intention is for the student to be able to:

1. Troubleshoot desktop computers
2. Demonstrate a familiarity with common computer hardware and software
3. Maintain computer hardware and software

Learning PACT Skills that will be DEVELOPED and/or documented in this course

Through involvement in this course, the student will develop ability in the following PACT skill area(s):

Analytical Thinking Skills

- I. Critical thinking
 - Through producing a written list of all hardware and software necessary to build a personal computer the student will demonstrate the ability to select components which will meet the outcome goal and be internally compatible.

Major Summative Assessment Task(s)

These learning outcome(s) and the Learning PACT skill(s) will be demonstrated by

1. Producing a written report detailing the hardware and software required to build a

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desktop computer intended for use by a college student. This report will contain the source and price for each component and a justification for the selection made.

Course Content

- I. Skills/Competencies – Actions that are essential to achieve the course outcomes:
 - A. Install, configure, optimize and upgrade personal computer components
 - B. Identify tools, diagnostic procedures and troubleshooting techniques for personal computer components
 - C. Perform preventive maintenance of personal computer components
 - D. Identify fundamental principles of using laptops and portable devices
 - E. Install, configure, optimize and upgrade laptops and portable devices
 - F. Use tools, diagnostic procedures and troubleshooting techniques for laptops and portable devices
 - G. Perform preventive maintenance on laptops and portable devices
 - H. Identify the fundamental principles of operating systems
 - I. Install, configure, optimize and upgrade operating systems – references to upgrading from Windows 95 and NT may be made
 - J. Identify tools, diagnostic procedures and troubleshooting techniques for operating systems
 - K. Perform preventive maintenance for operating systems
 - L. Identify the fundamental principles of using printers and scanners
 - M. Install, configure, optimize and upgrade printers and scanners
 - N. Identify tools and diagnostic procedures to troubleshoot printers and scanners
 - O. Perform preventive maintenance of printers and scanners
 - P. Identify the fundamental principles of networks
 - Q. Install, configure, optimize and upgrade a network
 - R. Use tools and diagnostic procedures to troubleshoot network problems
 - S. Perform preventive maintenance of networks including securing and protecting network cabling
- II. Themes – Key recurring concepts that run throughout this course:
 - A. PC computers are designed so that components can be replaced or upgraded
- III. Issues – Key areas of conflict that must be understood in order to achieve the intended outcome:
 - A. A computer is a complex system in which each component must support the intended purpose
 - B. The component parts of a computer must be compatible with all other system parts
- IV. Concepts – Key concepts that must be understood to address the issues:
 - A. Troubleshooting techniques
 - B. User interaction
 - C. Error analysis

Learning Units

- I. Introduction to the personal computer
 - A. Explain IT industry certifications
 - B. Describe a computer system

- C. Identify the names purposes and characteristics of cases and power supplies
 - D. Identify the names purposes and characteristics of internal components
 - E. Identify the names purposes and characteristics of ports and cables
 - F. Identify the names purposes and characteristics of input devices
 - G. Identify the names purposes and characteristics of output devices
 - H. Explain system resources and their purposes
- II. Safe lab procedures and tool use
- A. Explain the purpose of safe working conditions and procedures
 - B. Identify the tools and software used with personal computers and their uses.
 - C. Implement proper tool use
- III. Computer assembly – step-by-step
- A. Open the case
 - B. Install the power supply
 - C. Attach the components to the motherboard and install the motherboard
 - D. Install internal drives
 - E. Install drives in external bays
 - F. Install adaptor cards
 - G. Connect all internal cables
 - H. Re-attach the side panels and connect external cables to the computer
 - I. Boot the computer for the first time
- IV. Basics of preventive maintenance and troubleshooting
- A. Explain the purpose of preventive maintenance
 - B. Identify the steps of the troubleshooting process
- V. Fundamental operating systems
- A. Explain the purpose of an operating system
 - B. Describe and compare operating systems to include purpose, limitations, and compatibles
 - C. Determine operating system based on customer needs
 - D. Install, configure, upgrade and optimize an operating system
 - E. Navigate a GUI (Windows)
 - F. Troubleshoot operating systems
- VI. Fundamental printers and scanners
- A. Describe the types of printers and scanners currently available
 - B. Describe the installation, configuration and preventive maintenance techniques for printers and scanners
 - C. Describe potential safety hazards and safety procedures associated with printers and scanners
 - D. Describe how to share a printer and a scanner on a network
 - E. Troubleshoot printers and scanners

VII. Fundamental laptops and portable devices

- A. Compare and contrast desktop and laptop components
- B. Explain how to configure laptops
- C. Compare different mobile phone standards
- D. Describe repairs for laptops and portable devices
- E. Describe preventive maintenance procedures for laptops
- F. Describe how to troubleshoot a laptop

VIII. Fundamental networks

- A. Explain the principles of networking
- B. Describe types of networks
- C. Describe basic networking concepts, standards, and technologies
- D. Describe the physical components of a networking
- E. Explain OSI and TCP/IP data models
- F. Describe how to configure a NIC and a modem
- G. Identify names, purposes, and characteristics of other technologies used to establish connectivity
- H. Identify and apply common preventive maintenance techniques used for networks
- I. Identify potential safety hazards and implement proper safety procedures related to networks
- J. Design, implement, and upgrade a network based on the customer's needs
- K. Determine the components for your customer's network
- L. Describe installation, configuration and management of a simple mail server.
- M. Troubleshoot a network

IX. Fundamental security

- A. Explain why security is important
- B. Describe security threats
- C. Identify security procedures
- D. Identify common preventive maintenance techniques for security
- E. Outline security requirements based on customer needs
- F. Select security components based on customer needs
- G. Implement Customer's security policy
- H. Perform preventive maintenance on security
- I. Troubleshoot security

X. Communication skills

- A. Explain the relationship between communication and troubleshooting
- B. Describe good communication skills and professional behavior
- C. Explain ethics and legal aspects of working with computer technology
- D. Describe call center environment and technician responsibilities

XI. Advanced personal computers

- A. Give an overview of field, remote and bench technician jobs

- B. Describe situations requiring replacement of computer components
- C. Upgrade and configure personal computer components and peripherals
- D. Identify and apply common preventive maintenance techniques for personal computer components
- E. Troubleshoot personal computer components and peripherals

Learning Activities

Learning activities involve the student in installing, configuring, maintaining, and troubleshooting computer software and hardware. Lectures, discussions, lab projects, worksheets, quizzes and tests, and reading assignments will prepare the student to complete all assigned tasks.

Grade Determination

The student will be graded on lab and workbook assignments, unit quizzes, and active participation in class activities.