

Course Content

PIMA COMMUNITY COLLEGE

Effective: 200709

ITF 127A A+ Essentials (2006-601)

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Credit Hours: 2.50
Campus: Community
Lecture Periods: 2.50
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Description:

Introduction to the basic computer hardware and operating systems needed by entry-level service technicians. Includes the installation, building, upgrading, repairing, configuring, troubleshooting, optimizing, diagnosing, preventive maintenance, and fundamentals of computer security.

Performance Objectives:

Upon successful completion of this course, the student will be able to:

1. Identify personal computer (PC) hardware components.
2. Install and configure PC hardware and software.
3. Upgrade hardware and software.
4. Monitor and manage a system.
5. Troubleshoot problems and perform basic PC repair tasks.
6. Perform basic preventative maintenance tasks.

Course Outline:

- I. Getting started with PC hardware support
 - A. Computer components overview
 - B. Hardware, software, and firmware
 - C. Troubleshooting models
- II. Operating systems
 - A. Operating system fundamentals
 - B. Directory and file management
- III. Electricity and power systems
 - A. Electricity and electronics
 - B. Static electricity
 - C. Power supplies
 - D. Power supply troubleshooting
- IV. CPUs and motherboards
 - A. Central processing units (CPUs)
 - B. Packaging, slots, and cooling techniques
 - C. Motherboards and system cases
 - D. Motherboard troubleshooting
- V. Basic Input/Output System (BIOS)
 - A. BIOS and complementary metal oxide semiconductor (CMOS)
 - B. The power-on self test (POST) process
 - C. Firmware updates

- D. BIOS and POST troubleshooting

- VI. Memory systems
 - A. Memory
 - B. Memory packaging
 - C. Memory troubleshooting

- VII. Bus structures
 - A. Buses
 - B. Host system interaction
 - C. The Peripheral Component Interconnect (PCI) bus
 - D. Video buses

- VIII. Expansion cards
 - A. Drive adapters
 - B. Video cards
 - C. Sound cards
 - D. Internal modems
 - E. Expansion card troubleshooting

- IX. Ports, connectors, and cables
 - A. Serial and parallel ports, cables, and connectors
 - B. Keyboards, mice, and pointing devices
 - C. Universal Serial Bus (USB) ports, cables, and connectors
 - D. FireWire ports, cables, and connectors
 - E. Infrared and Bluetooth wireless ports
 - F. Multimedia ports, cables, and connectors
 - G. Port, cable, and connector troubleshooting

- X. Data storage devices
 - A. Hard drives
 - B. Optical drives
 - C. Removable storage devices
 - D. Storage device troubleshooting

- XI. Video and multimedia input/output devices
 - A. Cathode ray terminals
 - B. Liquid crystal displays (LCDs) and other video technologies
 - C. Sound input and output devices
 - D. Scanners and cameras

- XII. Printers
 - A. Dot matrix printers
 - B. Inkjet and related printer technologies
 - C. Laser printers
 - D. Other types of printers

- XIII. Portable computers and devices
 - A. Notebook computers
 - B. Handheld computers

- XIV. Monitoring and management
 - A. The Windows boot process

- B. System monitoring
 - C. System troubleshooting
 - D. System management
- XV. Connecting computers
- A. Networking concepts
 - B. Wired network connections
 - C. Wireless network connections
 - D. Network architectures
- XVI. Networking computers
- A. Network communications
 - B. Addressing
 - C. Internet connections
 - D. Network installation
 - E. Network troubleshooting
- XVII. Security
- A. Operating system security
 - B. Security hardware
 - C. The human aspects of security
- XVIII. Safety
- A. Safety and hazards
 - B. Safe work practices
 - C. Disposing of computer equipment
- XIX. Troubleshooting and maintaining a PC
- A. Tools and software
 - B. Preventative hardware maintenance
- XX. Professionalism and communication
- A. Professionalism and customer satisfaction
 - B. Problem and resolution tracking
- XXI. Windows installation and upgrades
- A. Installation
 - B. Upgrades