

CompTIA A+ Certification: A Comprehensive Approach (Exams 220-801 and 220-802)

Course Overview

The CompTIA A+ certification is the starting point for a career in IT. The exam covers maintenance of PCs, mobile devices, laptops, operating systems and printers

Course Introduction

4m

Course Introduction

Lesson 01 - Hardware Fundamentals

2hr 8m

Topic A: Computer System Components

Common Computer Components

Live Demo - Outside of the Computer

Live Demo - Inside of the Computer

The Motherboard

The CPU

Memory

The System Bus

Live Demo - Bus Slots

Topic B: Storage Devices

Storage Devices

Power Supplies

Cooling Systems

Expansion Cards

Riser Cards

Live Demo - Riser Card

Firmware

The System BIOS

The POST

Floppy Drives

Hard Drives

Types of Hard Drives

Live Demo - Drive Identification

Optical Disks

Optical Drives

Live Demo - Optical Drive Connections

Tape Drives

Solid State Storage

Types of Solid State Storage

Topic C: Device Connections and Interfaces

Ports

Computer Connections

Serial Connections

Live Demo - Serial Connectors

Parallel Connections

USB Connections

Live Demo - USB Connectors

IEEE 1394 and FireWire Connections

Live Demo - FireWire Cable

SCSI Connections

PATA Connections

SATA Connections

Live Demo - SATA Cable

Display Cable and Connector Types

Audio/Video Connections

Comparing Analog and Digital Video

Live Demo - Identifying Video Adapter Types

Wireless Device Connections

Lesson 01 Review

Lesson 02 - Operating System Fundamentals

3hr 4m

Topic A: Personal Computer Operating Systems

Microsoft Windows

Microsoft Windows Features

Microsoft Windows 7 Versions

Microsoft Windows Vista Versions

Microsoft Windows XP Versions

Other Operating Systems

Topic B: Windows Control Panel Utilities

The Control Panel

Internet Options

Display

User Accounts

Folder Options

System

Action Center

Windows Firewall

Power Options

Windows XP Control Panel Utilities

Windows Vista Control Panel Utilities

Windows 7 Control Panel Utilities

Demo - Exploring the Windows 7 Control Panel

Topic C: Command Line Tools

The Command Prompt

Operating System Command Line Tools

Networking Command Line Tools

The Recovery Console

WinRE

Topic D: Windows Operating System Tools

Types of User Accounts

User Account Control

Group Accounts

System Files and Folders

Windows Explorer

Computer/My Computer

File Extensions
Demo - Viewing File Extensions
File Attributes
Windows File System Types
Permissions
NTFS File Permissions
NTFS Folder Permissions
Demo - Exploring NTFS Permissions
Shared Files and Folders
Share Permissions
NTFS vs. Share Permissions
Permissions Considerations
User Authentication
Topic E: Windows Operating System Tools
Administrative Tools
Demo - Exploring Administrative Tools
Local Users and Groups
Device Manager
Demo - Using Computer Management and Device Manager
Task Manager
Demo - Using Task Manager
Disk Management
Migration Tools
The Registry
Registry Subtrees
Run Line Utilities
MSConfig
Demo - Exploring System Configuration Settings and Information
Lesson 02 Review

Lesson 03 - PC Technician Professional Best Practices

1hr 23m

Topic A: Basic Maintenance Tools and Techniques

Types of Hardware Toolkits
Live Demo - Identifying Common Toolkit Components
Software Diagnostic Tools
Hard Drive Self-Tests
Software Diagnostic Tests
Computer Component Maintenance Techniques
Cleaning Compounds and Materials
Live Demo – Maintenance
Documentation and Resources
Compliance and Government Regulations

Topic B: Electrical Safety

Static Electricity
ESD
ESD Prevention Techniques
Live Demo – ESD
EMI
EMI Prevention Techniques
An ESD Toolkit

Electrical Hazards
Electrical Safety Precautions
Topic C: Environmental Safety and Materials Handling
Environmental Considerations and Controls
Workplace Safety Issues
Environmental Safety Best Practices
General Power Issues
Power Protection Systems
Liquid Hazards
Chemical Hazards
MSDS Documents
Incident Reports
Hazardous Material Disposal Procedures
Topic D: Professionalism and Communication
Communication Skills
AUP
Professional Conduct
Prohibited Content
Best Practices Related to Prohibited Content or Activity
Computer Forensics
Lesson 03 Review

Lesson 04 - Peripheral Components

1hr 1m

Topic A: Install and Configure Display Devices
Display Device Types
Display Device Settings and Features
Device Drivers
Display Device Selection Tips
Display Device Installation Considerations
Demo - Configuring Display Devices
Topic B: Install and Configure Input Devices
Standard Input Device Types
Biometric Input Device Types
Specialized Input Device Types
KVM Switches
Input Device Selection Tips
Input Device Installation Considerations
Demo - Configuring Input Devices
Topic C: Install and Configure Expansion Cards
Expansion Card Types
Card Selection Tips
Card Installation Considerations
Expansion Card Configuration
Topic D: Install and Configure Multimedia Devices
Multimedia Devices
Common Multimedia Devices
Multimedia Device Selection Tips
Multimedia Device Installation Considerations
Multimedia Device Configuration
Lesson 04 Review

Lesson 05 - Managing System Components

1hr 40m

Topic A: Motherboards

Motherboard Sizes/Form Factors

Expansion Slots

RAM Slots

Integrated I/O Port Types

Chipsets

CMOS Battery

Live Demo - Replacing CMOS Battery

Jumpers and DIP Switches

Front Panel Connectors

Fan Connectors

Live Demo - Cooling Fins and a Fan

Live Demo - Processor Fan

Bus Speeds

Motherboard Power Connectors

Live Demo - Motherboard Power Connectors

Motherboard Selection Tips

Motherboard Installation Considerations

Live Demo - Motherboard

Topic B: CPUs and Cooling Systems

CPU Sockets

Intel CPU Socket Types

AMD CPU Socket Types

Cache

CPU Operational Characteristics

CPU Selection Factors

Cooling System Types

Cooling System Selection Factors

Live Demo - Cooling Method

Topic C: Select and Install Power Supplies

Power Supply Specifications

Power Supply Connections

Live Demo - Peripheral Power Connector

Power Supply Safety Recommendations

Selecting the Right Power Supply

Live Demo - Modern Power Supply

Live Demo - Legacy Power Supply

Topic D: RAM Types and Features

RAM Modules

Single-Sided and Double-Sided Memory

RAM Configurations

Types of RAM

ECC

Parity

RAM Characteristics

Topic E: Install and Configure Storage Devices

Media Capacity

RAID Standards

Common RAID Types
Internal Storage Device Considerations
External Storage Device Considerations
Demo - Installing an Internal Storage Device
Topic F: Configure the System BIOS
BIOS Memory
BIOS Components
Firmware Upgrades
BIOS Configuration Options
BIOS Diagnostics
BIOS Monitoring Capabilities
Lesson 05 Review

Lesson 06 - Installing and Configuring Operating Systems

1hr 40m

Topic A: Implement Virtualization

What is Virtualization?
Types of Virtualization
Components of a Virtual Environment
Virtual Desktop Infrastructure
Virtualization Requirements
Windows Client Virtualization Solutions
Demo - Creating a VM on Windows 7

Topic B: Install Microsoft Windows

Windows System Requirements
Hardware Compatibility
Boot Methods
Imaging
Installation Types
Third Party Drivers
Partitioning
Partitioning Types
Volumes
Partitioning and File System Types
Workgroups
Homegroups
Domains
Customizing System Options
Updates
Factory Recovery Partition
Microsoft Product Activation
Demo - Installing Microsoft Windows

Topic C: Windows Upgrades

In-Place Upgrades
Supported Upgrade Paths
Compatibility Tools

Topic D: Windows Preventive Maintenance

Data Backup and Restoration
Maintenance Tools
Scheduling Tasks
Patch Management

Managing Updates
Demo - Performing Preventive Maintenance
Lesson 06 Review

Lesson 07 - Customized Client Environments

22m

Topic A: Standard Clients

What is a Standard Client?
Client Requirements
Virtualization Workstation
Virtualization Workstation Requirements

Topic B: Custom Client Environments

Media Design Workstations
Media Design Workstation Requirements
Audio/Video Editing Workstations
Audio/Video Editing Hardware Requirements
Gaming PCs
Gaming PC Requirements
Home Theater PC
Home Theater PC Requirements
Home Server PC
Home Server Requirements
Lesson 07 Review

Lesson 08 - Networking Technologies

2hr 45m

Topic A: Physical Network Connections

Networks
Network Models
Network Interface Card Characteristics
Twisted Pair Cables
Types of Twisted Pair Cable
PVC Cable and Plenum Cabling
Twisted Pair Connectors
Coaxial Cables
Coaxial Cable and Connector Types
Live Demo - Coax and Coax Networks
Fiber Optic Cables
Fiber Optic Cable Types
Fiber Optic Connector Types
Wireless Connections
Additional Network Connection Methods

Topic B: TCP/IP

TCP/IP
IPv4 Addresses
Subnet Masks
Gateways
IP Address Classes
IPv6 Addresses
The IPv6 Address Format
IPv4 vs. IPv6
Addressing Schemes

Static vs. Dynamic Addressing

DHCP

DNS

Client-Side DNS

Demo - Identifying Your Computer's TCP/IP Information

Topic C: Network Connectivity

LANs

WANs

PANs

MANs

VPNs

Ethernet

Network Topologies

Network Device Types and Features

ISPs

Broadband Communications

Internet Connection Types and Features

Topic D: Ports and Protocols

Ports

TCP vs. UDP

Port Ranges

Common Ports

LDAP

SNMP

SSH

SFTP

SMB

Topic E: Set Up and Configure Windows Networking

Directory Services

Windows Networking Options

Demo - Joining a Computer to a Domain

Network Shares

Demo - Creating a Network Share

Network Connection Types

Proxy Settings

Remote Desktop

Network Location Settings

Firewall Settings

Alternative IP Address Configuration Methods

Network Card Properties

Live Demo - Network Cards and Cables

Topic F: Networking Tools

Cable Testers

Crimpers

Multimeter

Toner Probe

Loopback Plug

Punch Down Tool

Networking Utilities

Demo - Identifying Networking Tools

Lesson 08 Review

Lesson 09 - Installing, Configuring, and Maintaining SOHO Networks

48m

Topic A: Install and Configure SOHO Networks

SOHO Networks

Firewalls and SOHO Networks

DMZs

NAT Implementations

WPS

Basic QoS

802.11 Wireless Standards

WAPs

SSID

Encryption

Wireless Encryption Types

Router Settings and Configurations

Live Demo - Configure Router

Topic B: SOHO Network Security

Common SOHO Security Methods

Wireless Security

SOHO Wireless Security Methods

Wireless Client Configuration Options

Lesson 09 Review

Lesson 10 - Supporting Laptops

29m

Topic A: Laptop Hardware and Components

Laptops

Laptop Hardware Components

Types of Laptop Displays

Laptop Display Components

Internal Laptop Components

Laptop Expansion Options

Special Function Keys

Laptop Docking Solutions

Laptop Locks

Laptop Power Supplies and Batteries

Demo - Power Options

Auto-Switching and Fixed Input Power Supplies

Laptop Cooling Considerations

Topic B: Install and Configure Laptop Hardware Components

General Laptop Support Guidelines

Live Demo - Inside of Laptop

Lesson 10 Review

Lesson 11 - Mobile Computing

27m

Topic A: Mobile Device Technologies

What is Mobile Technology?

Mobile Operating Systems

Smartphones

Tablet PCs

Tablets vs. Laptops
Mobile Device Features
Topic B: Configure Mobile Devices
Mobile Security
Mobile Device Security Techniques
Network Configuration Settings
Bluetooth Configuration Methods
The Bluetooth Pairing Process
Data Synchronization
Synchronization Requirements
Email Configuration Methods
Email Server and Configuration Settings
Lesson 11 Review

Lesson 12 - Supporting Printers

49m

Topic A: Printer Technologies

Printers
An MFD
Laser Printers
The Laser Print Process
Inkjet Printers
The Inkjet Print Process
Duplexing
Thermal Printers
Thermal Print Processes
Impact Printers
The Impact Print Process
Topic B: Install, Configure, and Maintain Printers
Technical Printer Components
Printer Supplies and Media
Printer Driver Types
Printer Driver Compatibility
Local and Network-Based Printers
Print Device Sharing
Printer Configuration Options
Printer Maintenance
Live Demo - Printers
Demo - Installing a Local Printer
Lesson 12 Review

Lesson 13 – Security

1hr 16m

Topic A: Security Fundamentals

Corporate Security Policies
Security Incident Reports
The Principle of Least Privilege
Strong Passwords
User Education
Common User Security Practices
Authentication Methods

Topic B: Security Threats and Vulnerabilities

Malware

Types of Malware

Social Engineering

Physical Security Threats and Vulnerabilities

Common Wireless Security Threats

Topic C: Security Protection Measures

Physical Security

Physical Security Measures

Digital Security

Antivirus Software

Anti-Spyware Software

Firewalls

Social Engineering Prevention Techniques

Hard Drive Sanitation

Formatting Hard Drives for Disposal

Physical Destruction Methods for Computer Media

Topic D: Workstation Security

Windows Security Policies

Windows Firewall

Software Firewall Configuration Settings

Workstation Security Best Practices

Demo - Securing a Workstation

Lesson 13 Review

Lesson 14 - Troubleshooting Hardware Components

59m

Topic A: Troubleshooting Theory

Troubleshooting Theory

Troubleshooting Models

Troubleshooting Template Forms

Topic B: Troubleshoot Video and Display Devices

Common Video and Display Issues

Topic C: Troubleshoot Hard Drives and RAID Arrays

Drive and Array Troubleshooting Tools

Common Hard Drive Symptoms

Common RAID Array Issues

SATA Troubleshooting Tips

PATA Troubleshooting Tips

SCSI Troubleshooting Tips

Topic D: Troubleshoot System Components

Common System Troubleshooting Tools

Common CPU Issues

Common Cooling System Issues

Common Motherboard Issues

Repair vs. Replace

Common RAM Issues

Common External Power Source Problems

Common Power Supply Problems

Power Supply Troubleshooting Considerations

Topic E: Troubleshoot Laptops

Maintenance and Handling Techniques
Operating Environment Best Practices
General Laptop Issues
Common Laptop Keypad Issues
Common Wireless Connectivity Issues
Laptop Disassembly Best Practices
Topic F: Troubleshoot Printers
Common Printer Troubleshooting Tools
Printer Software Tools
Common Printer Symptoms
Lesson 14 Review

Lesson 15 - Troubleshooting System-Wide Issues

51m

Topic A: Troubleshoot Operating Systems

Operating System Troubleshooting Tools
BSOD
System Lockup Errors
Input/Output Device Issues
Application Errors
Boot Issues
Common Operating System Symptoms
Error and Warning Messages in Event Viewer
Registry Error Messages
Demo - Troubleshooting a Remote Computer with Remote Desktop

Topic B: Troubleshoot Wired and Wireless Networks

Common Network Issues
Network Troubleshooting Utilities
Network Troubleshooting Tools
Demo - Troubleshooting Network Issues

Topic C: Troubleshoot Common Security Issues

Common Security Issues
Malware Removal Process
Malware Removal Best Practices
Security Troubleshooting Tools
Lesson 15 Review
Course Closure

Total Duration: 19hrs 44m