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