

CompTIA A+ Certification

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, printers, and more.

<u>Course Introduction</u>	5m
Course Introduction	
<u>Section 01 - Configuring BIOS</u>	30m
Configuring BIOS	
Firmware	
Firmware Upgrades	
The System BIOS	
The POST	
BIOS Configuration Options	
BIOS Diagnostics	
BIOS Monitoring Capabilities	
BIOS Memory	
BIOS Components	
Monitoring Internal Components	
Demo - HWMonitor	
Monitoring Internal Components (cont.)	
Demo - SpeedFan	
<u>Section 02 - Motherboards</u>	36m
Motherboards	
Motherboard Sizes/Form Factors	
Power Supplies	
Cooling Systems	
Common Computer Components	
The Motherboard	
RAM Slots	
Integrated I/O Port Types	
Chipsets	
CMOS Battery	
Live Demo - Replacing CMOS Battery	
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

Section 03 - Expansion Slots

41m

Expansion Slots
Expansion Cards
Expansion Slots
Riser Cards
Live Demo - Riser Card
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
The CPU
The System Bus
Live Demo - Inside of the Computer
Live Demo - Bus Slots
Live Demo - Outside of the Computer

Section 04 - RAM Types and Features

13m

RAM Types and Features
Memory
RAM Modules
Single-Sided and Double-Sided Memory
RAM Configurations
Types of RAM
ECC
Parity
RAM Characteristics

Section 05 - Install and Configure PC Expansion Cards

51m

Install and Configure PC Expansion Cards
Ports
Computer Connections

Serial Connections
Parallel Connections
USB Connections
IEEE 1394 and FireWire Connections
SCSI Connections
PATA Connections
SATA Connections
Display Cable and Connector Types
Audio/Video Connections
Comparing Analog and Digital Video
Wireless Device Connections
Front Panel Connectors
Live Demo - Serial Connectors
Live Demo - USB Connectors
Live Demo - FireWire Cable
Live Demo - SATA Cable
Live Demo - Identifying Video Adapter Types
Network | Firewire | Thunderbolt Cards - Installation
Modem Cards | Wireless Cards | TV Tuner Video Capture Cards

Section 06 - Install and Configure Storage Devices

56m

Install and Configure Storage Devices
Storage Devices
Optical Drives
Optical Disks
Live Demo - Optical Drive Connections
Hard Drives
Types of Hard Drives
Magnetic Hard Disk Drive Speeds
Live Demo - Drive Identification
Solid State Storage
Types of Solid State Storage
Solid State | Flash Drives
Media Capacity
RAID Standards
Common RAID Types
Internal Storage Device Considerations
External Storage Device Considerations
Demo - Installing an Internal Storage Device
Tape Drives

Section 07 - CPU's and Cooling Methods 14m

CPU's and Cooling Methods
CPU Types and Characteristics
CPU Characteristics: Cooling Techniques
Demo - CPU-Z
Demo - Windows Task Manager

Section 08 - PC Connection Interfaces 29m

PC Connection Interfaces
Physical Connections: USB
Physical Connections: Firewire
Physical Connections: SATA
SATA Cables and Ports
Physical Connections: VGA
Physical Connections: HDMI
Physical Connections: DVI
Physical Connections: Thunderbolt
Physical Connections: Characteristics
Wireless Connections: Bluetooth
Wireless Connections: IR
Wireless Connections: NFC

Section 09 - Power Supplies 16m

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

Section 10 - Custom Computer Specifications 21m

Custom Computer Specifications
What is a Standard Client?
Client Requirements
Virtualization Workstation
Virtualization Workstation Requirements
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

Section 11 - Installing Displays

32m

Installing Displays
Display Device Types
Display Device Settings and Features
Device Drivers
Display Device Selection Tips
Display Device Installation Considerations
Demo - Configuring Display Devices
Backlighting
Monitor Panel Types
Plasma Display
OLED (Organic Light-emitting Diode)
Multiple Displays
Display Terminology

Section 12 - PC Connectors

13m

PC Connectors
DVI to HDMI
USB Ports
USB Ports | Power
USB Cables
USB to Ethernet

Section 13 - Installing Peripheral

40m

Installing Peripheral
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
Expansion Card Types
Card Selection Tips
Card Installation Considerations
Expansion Card Configuration
Multimedia Devices

Common Multimedia Devices
Multimedia Device Selection Tips
Multimedia Device Installation Considerations
Multimedia Device Configuration

Section 14 - Installing Multifunction Devices and SOHO Networks

47m

Installing Multifunction Devices and 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
Common SOHO Security Methods
Wireless Security
SOHO Wireless Security Methods
Wireless Client Configuration Options

Section 15 - Printer Technologies

23m

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

Section 16 - Printer Maintenance

31m

Printer Maintenance
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
Demo - Virtual Printing

Section 17 - Networking

34m

Networking
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
Cable Types | Definitions
Types of COAX Cables

Section 18 - Properties and Characteristics of TCP/IP

46m

Properties and Characteristics of 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

Section 19 - TCP vs. UDP 13m

TCP vs. UDP

Ports

TCP vs. UDP

Port Ranges

Common Ports

LDAP

SNMP

SSH

SFTP

SMB

Section 20 - Wi-Fi Networking Standards and Encryption Types 4m

Wi-Fi Networking Standards and Encryption Types

Standards

Section 21 - Install and Configure SOHO Wireless/Wired Router 26m

Install and Configure SOHO Wireless/Wired Router

Setting up your Router

SOHO Wireless Router Features

Port Descriptions

Creating Address Objects

Define Appropriate NAT Policies

Opening Ports to allow Service behind Firewall

Creating Firewall Access Rules

Other Router Options

Demo - Setting up SonicWALL SOHO Router

Section 22 - Architecture and Internet Connection Types 25m

Architecture and Internet Connection Types

LANs

WANs

PANs

MANs

VPNs

Ethernet

Network Topologies

Network Device Types and Features

ISPs

Broadband Communications

Internet Connection Types and Features

Section 23 - Networking Tools

14m

Networking Tools

Cable Testers

Crimpers

Multimeter

Toner Probe

Loopback Plug

Punch Down Tool

Networking Utilities

Demo - Identifying Networking Tools

Section 24 - Laptop Hardware Components

28m

Laptop Hardware 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

General Laptop Support Guidelines

Live Demo - Inside of Laptop

Section 25 - Mobile Devices

26m

Mobile Devices

What is Mobile Technology?

Mobile Operating Systems

Smartphones

Tablet PCs

Tablets vs. Laptops

Mobile Device Features

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

Section 26 - Mobile Device Ports and Accessories

21m

Mobile Device Ports and Accessories
Mobile Device Connection Types
Mobile Device Hotspots / Tethering
Mobile Device Accessories
Mobile Device Credit Card Readers
Troubleshooting Mobile Devices | No Display
Troubleshooting Mobile Devices | Keypad Symptoms
Troubleshooting Mobile Devices | Troubleshooting
Troubleshooting Mobile Devices | Improper Charging
Troubleshooting Mobile Devices: All

Section 27 - Troubleshooting Theory

53m

Troubleshooting Theory
Troubleshooting Models
Troubleshooting Template Forms
Unexpected Shutdowns
System Lockups
POST Beep Codes
Why did my time reset?
Boot to Incorrect Device
Continuous Reboots
Common Symptoms
PC Indicator Lights
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

Section 28 - Troubleshooting RAID Arrays and Hard Drives

23m

Troubleshooting RAID Arrays and Hard Drives
Drive and Array Troubleshooting Tools
Common Hard Drive Symptoms
Common RAID Array Issues

SATA Troubleshooting Tips
PATA Troubleshooting Tips
SCSI Troubleshooting Tips
Toolkits
Demo - CHKDSK | FORMAT
Demo - Diskpart
Demo - Defrag Tools

Section 29 - Troubleshooting Video

1m

Troubleshooting Video
Common Video and Display Issues

Section 30 - Troubleshooting Network Issues

12m

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

Section 31 - Troubleshooting Printers

14m

Troubleshooting Printers
Common Printer Troubleshooting Tools
Printer Software Tools
Common Printer Symptoms
Printer Troubleshooting Tools
Printer Tools: Toner Vacuum

Section 32 - Windows Operating Systems

1h 17m

Windows Operating Systems
Microsoft Windows
Microsoft Windows Features
Windows 10 New Features
Windows 10 Upgrades
Microsoft Windows 7 Versions
Microsoft Windows Vista Versions
Microsoft Windows XP Versions
Other Operating Systems
Windows System Requirements
Hardware Compatibility
Boot Methods
Imaging
Installation Types
Third Party Drivers

Partitioning
Partitioning Types
Volumes
Partitioning and File System Types
Customizing System Options
Updates
Factory Recovery Partition
Microsoft Product Activation
Demo - Installing Microsoft Windows
In-Place Upgrades
Supported Upgrade Paths
Compatibility Tools

Section 33 - Command Line Tools

12m

Command Line Tools
The Command Prompt
Operating System Command Line Tools
Networking Command Line Tools
The Recovery Console
WinRE

Section 34 - Microsoft Operating System Features and Tools

1h 55m

Microsoft Operating System Features and Tools
Administrative Tools
Demo - Computer Management
Device Manager
Local Users and Groups
Demo - Performance Monitor
Demo - Services
Task Manager
Disk Management
Migration Tools
Demo - System Configuration
Demo - Task Scheduler
Component Services
Data Sources
Demo - Print Management
Memory Diagnostic Tool
The Registry
Registry Subtrees
Run Line Utilities
Demo - Exploring Administrative Tools
Demo - Using Computer Management and Device Manager

Demo - Using Task Manager
Demo - Exploring System Configuration Settings and Information
MSConfig
Demo - System Restore
Demo - Windows Update

Section 35 - Control Panel Utilities

1h 28m

Control Panel Utilities
The Control Panel
Windows XP Control Panel Utilities
Windows Vista Control Panel Utilities
Windows 7 Control Panel Utilities
Demo - Exploring the Windows 7 Control Panel
Internet Options
Display
User Accounts
Folder Options
Types of User Accounts
User Account Control
Group Accounts
System Files and Folders
Windows Explorer
Computer/My Computer
File Extensions
File Attributes
Windows File System Types
Permissions
NTFS File Permissions
NTFS Folder Permissions
Shared Files and Folders
Share Permissions
NTFS vs. Share Permissions
Permissions Considerations
User Authentication
Demo - Viewing File Extensions
Demo - Exploring NTFS Permissions
System
Windows Firewall
Power Options
Action Center

Section 36 - Windows Networking on Client Desktops

38m

Windows Networking on Client Desktops

Workgroups

Homegroups

Domains

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

Section 37 - Preventative Maintenance

37m

Preventative Maintenance

Data Backup and Restoration

Maintenance Tools

Scheduling Tasks

Patch Management

Managing Updates

Demo - Performing Preventive Maintenance

Demo - Microsoft Windows Defender

Demo - Backup and Restore

Section 38 - Features and Functionality of the Mac OS and Linux Operating Systems

25m

Features and Functionality of the Mac OS and Linux Operating Systems

Patch Management in Mac OS X and Linux

Disk Maintenance: Mac OS X

Disk Maintenance: Linux

Mac OS X and Linux launchd and cron

Mac OS X Backups

Linux Backups

Mac OS X Antivirus

Screen Sharing

Force Quit Mac OS X

Key Chain

Spotlight

iCloud
Mac OS Multitouch Gestures - Touchscreen
Mac OS X Finder
Mac OS X Dock
Mac OS X Boot Camp
Basic Linux Commands
Basic Linux Commands (Continued)

Section 39 - Client Side Virtualization

20m

Client Side 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

Section 40 - Cloud-based Concepts

10m

Cloud-based Concepts
SaaS (Software as Service)
IaaS (Infrastructure as Service)
PaaS (Platform As Service)
Public vs Private Clouds
Resource Pooling
Measured Service

Section 41 - Network Host Properties

13m

Network Host Properties
Server Roles
Internet Appliances

Section 42 - Mobile Operating Systems

3m

Mobile Operating Systems
Open Source Software
Closed Source Software
Screen Orientation (Accelerometer | Gyroscope)
Mobile Operating System Features

Section 43 - Mobile Device Network and E-mail

10m

Mobile Device Network and E-mail
Mobile Device Hotspot

Mobile Device Tethering
Mobile Device Airplane Mode
Mobile Device Email Setup
IMEI vs IMSI
Mobile Data Synchronization

Section 44 - Security

21m

Security
Malware
Types of Malware
Social Engineering
Physical Security Threats and Vulnerabilities
Common Wireless Security Threats

Section 45 - Prevention Methods

54m

Prevention Methods
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
Corporate Security Policies
Security Incident Reports
The Principle of Least Privilege
Strong Passwords
User Education
Common User Security Practices
Authentication Methods
Windows Security Policies
Windows Firewall
Software Firewall Configuration Settings
Workstation Security Best Practices
Demo - Securing a Workstation

Section 46 - Windows Security Settings

11m

Windows Security Settings
Users and Groups
Windows Security

Section 47 - Security Best Practices 5m

Security Best Practices
Password Best Practices
Account Management

Section 48 - Securing Mobile Devices 7m

Securing Mobile Devices
Locks
Remote Security
Physical Destruction

Section 49 - Troubleshooting Common PC Tools 48m

Troubleshooting Common PC Tools
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
Common Network Issues
Network Troubleshooting Utilities
Network Troubleshooting Tools
Demo - Troubleshooting Network Issues
Common Security Issues
Malware Removal Process
Malware Removal Best Practices
Security Troubleshooting Tools

Section 50 - Common PC Security Issues 6m

Common PC Security Issues
Browser Issues
Operating System Issues

Section 51 - Common Mobile Operating Systems Troubleshooting 16m

Common Mobile Operating Systems Troubleshooting
Dim Display
Intermittent Wireless
Monitor Issues

Applications Not Loading
Extremely Short Battery Life
Overheating
Frozen System
No Sound from Speakers
Tools
Common Symptoms
Unauthorized Access
Tools (Continued)
Backup / Restore

Section 52 - Common Safety Practices

53m

Common Safety Practices
Static Electricity
ESD
ESD Prevention Techniques
Live Demo - ESD
EMI
EMI Prevention Techniques
An ESD Toolkit
Electrical Hazards
Electrical Safety Precautions
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
Communication Skills
AUP
Professional Conduct
Prohibited Content
Best Practices Related to Prohibited Content or Activity
Computer Forensics

Section 53 - Maintenance Tools and Techniques

27m

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

Section 54 - Privacy and Licensing Concepts

23m

Privacy and Licensing Concepts
Incident Response
Data / Device Preservation
Licensing (DRM | EULA)
Proper Communication and Professionalism
Avoid Distractions
Dealing with Difficult Situations and Customers
Set Expectations
Deal Appropriately with Confidential Materials
Consider Corporate Policies before Implementing Changes
Course Closure

Total Duration: 25h 56m