

# CompTIA A+ Essentials Edition

- **Course Number:** 220-701
- **Length:** 5 Day(s)

## Certification Exam

This course is preparation for the CompTIA A+ Essentials Certification exam

## Course Overview

CompTIA A+ Essentials measures the necessary competencies of an entry-level IT professional with at least 500 hours of hands-on experience in the lab or field. It tests for the fundamentals of computer technology, networking and security, as well as the communication skills and professionalism now required of all entry-level IT professionals.

## Prerequisites/Audience

This course is appropriate for entry-level service technicians.

## Course Outline

### Course Introduction

Course Introduction

### Module 01 - Troubleshooting Methodology

Troubleshooting Methodology

Popular Troubleshooting Models

Basic Troubleshooting Stages

CompTIA's A+ Model

CompTIA's Network+ Model

Novell's Model

The ASID Model

Gathering Information from the User

Some Examples

Identifying Hardware or Software Problem

Information Resources

Microsoft Help and Support

Microsoft KB Article

Demo - Help and Support in XP

Demo - Help and Support in Vista

Problem and Resolution Tracking

Help Desk Software

Professional Service

Professional Communication Guidelines

Pitfalls of Communication

Effective Communication  
Verbal Communication  
Verbal Guidelines  
Nonverbal Communication  
Customer Satisfaction  
Service-level Agreement  
Module 01 Review

## **Module 02 - Operating Systems**

Operating Systems  
Windows  
Windows 7 Professional Edition  
Macintosh (Mac) OS  
Mac OS X Leopard  
Linux  
Ubuntu Linux  
Windows Client Operating Systems  
Product Lifecycle  
Identify Available Support  
Not Available in Windows 7 Home Basic  
Not Available in Either Win 7 Home Edition  
Available Only in Win 7 Enterprise & Ultimate  
Not Available in Vista Home Basic  
Not Available in Either Home Version  
Available in Home Premium & Ultimate  
Available Only in Windows Vista Ultimate  
Available in Ultimate and Enterprise  
Windows XP Professional Features  
Demo - Windows XP Professional  
Windows 2000 Features  
Windows 2000 Mobile Support  
Demo - Windows 2000 Professional  
32-bit versus 64-bit  
The Windows 7 Desktop  
The Windows Vista Desktop  
Windows XP Professional Desktop  
Windows 2000 Professional Desktop  
Windows Aero Features  
Windows Aero  
3D Windows Flip  
Windows 7 Aero Features  
Aero System Requirements  
Windows Explorer in Win 7 Professional  
Windows Explorer in Vista  
Windows Explorer in XP

Demo - Locating Windows 7 Interface Components

The Control Panel (Vista)

Control Panel Search

Computer Management Console

Network Folder

Command-line Utility

Task Manager

Microsoft Management Console

Demo - Vista Features

Directory Structure

Navigating Directories

Libraries

Creating Directories

Creating Libraries

Adding Folders to a Library

A Library's Included Locations

Copying Directories

Removing Directories

Deleting Libraries

Removing Folders from a Library

Demo - Directories

Binary and Text Files

ASCII

File-name Extensions

Common File Extensions

File Names and Extensions

Batch Files

Demo - Batch Files

File Attributes

Command-line Utility

Attrib.exe

Demo - File Attributes

Demo - Command-line

Sharing Files with Local Users

Public Folder Sharing in Vista

Shared Documents

Demo - Sharing Files in the Public Folder with Local Users

HomeGroups in Windows 7

Demo - Exploring Homegroups

Permissions

NTFS

NTFS File Permissions

NTFS Folder Permissions

Guidelines for NTFS Permissions

Assigning NTFS Permissions  
Demo - Setting NTFS Permissions  
Module 02 Review

**Module 03 - Electricity and Power Supplies**

Electricity and Power Supplies  
Characteristics of Electricity  
Alternating and Direct Current  
Characteristics, continued  
Electricity  
Safety Precautions  
Electrostatic Discharge (ESD)  
Preventing Static Buildup  
Preventing Static Discharge  
An Antistatic (ESD) Wrist Strap  
Typical Internal Components  
Slide Catches  
Determining Which Side to Open  
Removable Front Cover  
Live Demo - ESD  
Live Demo - Outside of the Computer  
Live Demo - Inside of the Computer  
A PC Power Supply  
Voltage Selection Switch  
Live Demo - Modern Power Supply  
Live Demo - Legacy Power Supply  
Power Supply Specifications  
Typical Power Requirements  
Standard Outputs  
Power Connectors  
Peripheral Power Connector  
Live Demo - Peripheral Power Connector  
Floppy Power Connector  
SATA Power Connector  
Wire Colors  
Live Demo - Wire Colors  
Motherboard Power Connectors  
Live Demo - Motherboard Power Connectors  
Power Supply Form Factors  
Module 03 Review

## **Module 04 - CPUs and Motherboards**

CPUs and Motherboards

Central Processing Unit (CPU)

Control Units

Execution Units

CPU Performance

CPU Design Characteristics

Multiple-processor Support

Processor Specifications

Bus Width Specifications

Internal Specifications

Live Demo - Processor Installation

Inside the Case

Chipsets

Northbridge and Southbridge

CPU Packaging

PGA (Pin Grid Array) Package

SECC (Single Edge Cartridge ) Package

Packages

Common Desktop Sockets and Slots

Pentium with MMX CPU & Socket 7 Socket

Typical Cooling Mechanisms

Cooling Notes

Heat Sinks and Cooling Fins

Power Supply and CPU Fans

Cooling Fins

Cooling Fins and a Fan

Live Demo - Cooling Fins and a Fan

Live Demo - Processor Fan

Other Cooling Techniques

Live Demo - Cooling Method

Motherboards

Components

A Motherboard

Live Demo - Motherboard

Daughter Board

Riser Card

Live Demo - Riser Card

Form Factor

Module 04 Review

## **Module 05 - The Basic Input/Output System**

The Basic Input/Output System

Firmware

BIOS  
CMOS  
CMOS Battery  
CMOS Configuration  
CMOS Utility Access Examples  
CMOS Configurable Settings  
BIOS Configuration Procedure  
Demo - BIOS  
BIOS Updates  
BIOS Update Sources  
Determining the BIOS Version  
Flashing the BIOS  
BIOS Update Failures  
Recovering from a Failed Update  
Bad CMOS Battery  
Replacing CMOS Battery  
Live Demo - Replacing CMOS Battery  
POST Process  
Beep Codes  
Numeric Codes  
Logo Screen  
The Boot Process  
Boot Devices  
Boot Devices In The System BIOS  
Module 05 Review

### **Module 06 - Memory Systems**

Memory Systems  
Memory  
Measuring Memory  
Larger Memory Units  
Memory Types  
Volatile vs. Non-volatile Memory  
Dynamic vs. Static Memory  
Asynchronous vs. Synchronous  
Memory Access Types  
Access Time  
Speed Ratings  
Banking Requirements  
Packaging  
Single- and Double-sided Modules  
Package Types: Desktops  
Package Types: Laptops  
Package Type: Printers  
Memory Error Recovery

Parity  
Demo - Legacy Memory Modules  
Live Demo - Legacy Memory Modules  
Live Demo - Modern Memory Modules  
Live Demo - Notebook Memory  
Task Manager  
Performance Tab Indicators  
The Performance Tab  
Demo - Task Manager  
Virtual Memory  
Optimizing the Page File  
Demo - Page File  
Module 06 Review

### **Module 07 - Bus Structures**

Bus Structures  
Buses  
PCI Bus Slots  
Video Bus  
An AGP Video Bus Slot  
The Riser Bus  
Three Riser Standards:  
System Interaction  
Interrupts  
IRQs  
Device Manager: IRQs  
I/O Addresses  
Device Manager: I/O Addresses  
DMA Channels  
Device Manager: DMA Channels  
Base Memory Addresses  
Device Manager: Base Memory  
Demo - Device Manager  
Bus Types  
PC/XT Bus  
PC/XT Card  
PC/AT and ISA Bus  
ISA Adapter  
Live Demo - Comparing ISA to PCI  
ISA Expansion Bus Slot  
PCI Bus  
PCI Adapter  
Live Demo - Bus Slots  
PCI Slots  
PCIe

Multifunction Cards  
Need for Video Buses  
VESA Local Bus  
VLB Adapter  
PCI-based Video  
AGP  
AGP Adapter  
AGP Standards  
AGP Characteristics  
AGP Slots  
An AGP Slot  
PCIe 02  
A PCIe Video Card  
Live Demo - Graphics Slots  
Module 07 Review

### **Module 08 - Expansion Cards**

Expansion Cards  
Controllers and Interfaces  
PC Drive Interfaces  
IDE/ATA  
ATA Standards  
PIO Modes  
DMA Modes  
UltraDMA Modes  
ATA Motherboard Connectors  
Standard ATA Drive Cable  
High-speed 80-pin ATA Drive Cable  
SATA Data Cable  
Live Demo - SATA Cable  
Drive Capacities  
Drive Identification  
Primary and Secondary Channels  
Live Demo - Drive Identification

SCSI  
SCSI Device IDs  
Termination  
SCSI ID and Termination  
Differential SCSI  
ST506 / ST 412 Interface  
ESDI Interface  
USB Interfaces  
IEEE 1394 (FireWire, i.Link) Interfaces  
Video Adapters

Creating an Image  
Maximum Colors  
Video Standards  
SuperVGA  
15-pin VGA/SVGA Connector  
VGA/SVGA Connector and Socket  
DVI Connection Types  
DVI-D Port  
DVI-I Port  
HDMI (High-Definition Multimedia Interface)  
Live Demo - Identifying Video Adapter Types  
PC Sound  
Sound Card Components  
A Sound Card  
Sound Card Connectors  
Live Demo - Sound Connectors  
Speakers  
CD Audio  
Modems  
Riser Cards - AMR  
Riser Cards - CNR  
Riser Cards - ACR  
Comparing AMR and CNR  
Softmodems  
When a Modem isn't a Modem  
Modem Connections  
Live Demo - RJ-11 Connectors  
Live Demo - Network Cards and Cables  
Data Transmission Speed  
ITU Standards  
MNP Classes  
Error Detection and Compression  
Module 08 Review

### **Module 09 - Peripheral Connection Types**

Peripheral Connection Types  
Ports  
Serial Ports  
Serial Port Characteristics  
Serial Port Characteristics – Parity Options  
Serial Port Characteristics – Flow Control  
Male and Female Connectors  
Serial Cables  
Serial Connector Pin Numbering  
Pin Numbers

9-pin Null Modem Connections  
25-pin Null Modem Connections  
Live Demo - Serial Connectors  
Parallel Ports  
Parallel Port Resources  
Port Types  
Printer Port Types  
Female 25-pin Parallel  
Centronics  
Live Demo - 25-pin Parallel Port/Centronics Connector  
Input Devices  
Keyboard Port and Connector  
AT Keyboard Port and Connector  
Mouse Port and Connector  
Bar Code Reader with Y-cable  
Live Demo - PS/2 Keyboard and Mouse  
Live Demo - USB Mouse  
Demo - USB Mouse  
Mouse Properties  
Demo - Mouse Properties  
Keyboard Properties  
Demo - Keyboard Properties  
KVM Switch  
PS/2 KVM  
USB KVM  
USB Features  
USB Classes  
USB Device Classes  
USB Versions  
USB Symbols  
USB Devices in Device Manager  
USB Ports  
USB Connectors  
Live Demo - USB Connectors  
USB Specifications  
USB Power  
Installing USB Device via USB Port  
Installing USB Devices  
FireWire Features  
FireWire Versions  
Isochronous Transfers  
4-pin FireWire Port and Connector  
6-pin FireWire Ports and Connector  
FireWire Power  
Installing IEEE 1394 Devices

Live Demo - FireWire Cable  
Multimedia Connections  
1/8" Connectors  
Example of Line-in Device  
Speakers Connected to a PC  
Speakers Connected Together  
Microphone Connection to a PC  
Live Demo - Back of PC  
RCA Connectors  
S-Video Connectors  
RCA and S-Video Connectors  
Coax Connectors  
Coax Connector  
MIDI Connectors  
S/PDIF  
S/PDIF Connections  
Module 09 Review

## **Module 10 - Data Storage Devices**

Data Storage Devices  
Hard Drive Components  
Components of Magnetic Hard Drive  
Solid-state Drives  
Solid-state Drive Advantages  
Magnetic Drive Advantages  
Hard Drive Geometry  
Head Crash  
Hard Drive Connections  
Partitioning  
Partition Types  
Partitioning Utilities  
File Systems  
FAT File System  
NTFS File System  
FAT vs. NTFS  
Directory Trees  
Root directory of C:  
Formatting  
Demo - Disk Manager  
Fault Tolerance  
RAID Levels  
Choosing a RAID Level  
Striped Volume  
Mirrored Volume  
RAID 5

Software and Hardware RAID  
Hardware RAID Advantages  
Components of a CD  
Recordable CDs  
CD Drive Components  
CD Drive Speeds  
DVDs  
DVD Types  
DVD Standards  
Blu-Ray Discs  
Optical Drive Connections  
Live Demo - Optical Drive Connections  
Using a CD  
Using CD and DVD Drives  
Demo - Using an Optical Drive  
USB Flash Drives  
USB Technical Specifications  
Flash MP3 Player  
USB Drivers  
Demo - USB Drives  
Floppy Disks  
  
5.25" Floppy Disk  
3.5" Floppy Disk  
Floppy Disk Storage  
Capacities  
Write Protection  
Floppy Controller Resources  
Floppy Drive Cable  
Floppy Controller Connector  
Diskette Preparation  
Tape Drives  
Tape Formats  
Tape Head Cleaning  
Hard Disk Maintenance  
Disk Cleanup  
Demo - Disk Cleanup  
ScanDisk  
ScanDisk Versions  
Demo - Running Scan Disk  
Chkdsk  
Disk Defragmenter  
Disk Defragmenter in Windows XP  
Demo - Defragmenting a Disk  
Module 10 Review

## **Module 11 - Video Output and Image Input Devices**

Video Output and Image Input Devices

CRT Monitor

CRT Components

How CRTs Produce Images

Degaussing

CRT Characteristics

Video Connectors

Display Properties

Display Adjustments

Safety

Flat-Panel Monitor

LCD Advantages

How an LCD Works

Flat-Panel Monitor Characteristics

Touch-Screen

Touch-Screen Input

Laptop Monitors

Flat-Panel Monitor Connections

TMDS

LCD Monitor Installation

Multiple Monitors

Display Projectors

DisplayPort Technology

Demo - Multiple Monitors

Scanners

Flatbed Scanner

Multifunction Sheet-feed Scanner

Hand-held Scanner

TWAIN

Scanner Configuration Features

Scanner Connections

Digital Cameras

Resolutions

Digital Camera Memory Cards

Memory Cards

Printing Images

Digital Camera Connections

Memory Card Readers

Web Cameras (IP Camera's)

Webcam Example

Network Cameras

Network Camera Example

Network Camera Uses

Headsets, Microphones, and Speakers  
Connection Software  
Module 11 Review

## **Module 12 - Printers**

Printers

Dot-Matrix Printer

Dot-Matrix Printer Components

Dot-Matrix Printer Connections

Dot-Matrix Options

Other Impact Printers

An Inkjet Printer

Inkjet Process

Inkjet Cartridge Print Heads

Print Heads

Inkjet Print Quality

Straight-Through Paper Path

Curved Paper Path

Photo Printers

Printing onto a CD

Laser Printer

Laser Printer Components

Toner Cartridge Components

Laser Scanner Assembly

Power Supplies

Paper Control and Transport Assembly

Transfer Corona Assembly

Fusing Assembly

Electronic Control Package

Laser Printing Process

Live Demo - Printers

Other Printer Types

Plotter

Additional Printer Types

Main Windows Print Processes

Client Printer Process

Spooler Process

Inkjet Printer Installation

Ink-Level Monitoring Utility

Printer Interfaces

Inkjet Communications Interfaces

Configure the Connection Type

Parallel Port in Device Manager

Installing an Inkjet Printer

Upgrading a Device Driver

Laser Printer Installation  
Laser Printer Interfaces  
Communications Interfaces  
Installing a Laser Printer  
Installing a Network Printer in Windows 7  
Printer Configuration Options  
Demo - Installing a Local Printer  
Printer Options  
Maintenance  
Dot-Matrix Printer Maintenance  
Inkjet Printer Maintenance  
Laser Printer Maintenance  
Module 12 Review

### **Module 13 - Connecting Computers**

Connecting Computers  
Local Area Network  
Example of a LAN  
Basic Types of Networks  
The Peer-to-Peer Model  
A Peer-to-Peer Network  
Peer-to-Peer Authentication  
Local User Accounts  
Using a Shared Resource  
The Client/Server Model  
A Client/Server Network  
Network Client  
The Logon Process  
Network Wiring  
Fiber Optic Cable  
Fiber Optic Cable Networks  
Twisted-Pair Cable  
Composite Cable  
Coaxial Cable  
Duplex  
Ethernet  
Ethernet Media  
Ethernet Standards  
Wireless LAN  
Benefits & Drawbacks of WLANs  
Wide Area Network  
WAN Connections  
POTS/PSTN  
ISDN  
VPN

DSL  
Cable  
Satellite  
Wireless WAN  
Cellular  
3G Networks  
4G Networks  
T and E lines  
X.25 and Frame Relay  
ATM  
Fiber Optic Wired Connections  
SONET  
Fiber Optic Connectors  
Fiber Optic Connector Types  
Twisted-Pair Connections  
UTP Categories  
Stranded vs. Solid TP Cable  
Twisted-Pair Connectors  
RJ Connectors  
Modern Residential Wiring  
RJ-25 Pinout  
RJ-45 Connector  
Pin Numbering of RJ-45 Connector  
Live Demo - RJ-45 and RJ-11 Connectors  
Coaxial Connections  
Common Components of Coaxial  
RG Standards  
Thinnet Connectors  
Thicknet Vampire Tap  
Live Demo - Coax and Coax Networks  
Plenum Wiring  
Network Interface Card  
Computer Network Connections  
PCI Ethernet Card  
Notebook Computers  
NIC Selection  
Status Indicator Lights  
Device Manager  
Live Demo - Examining your NIC  
Modems  
Modulation/Demodulation  
Connections  
Star Topology  
Ethernet Hubs  
How a Hub Works

Router  
Routing between Network Segments  
Routers: Key Points  
Live Demo - Configure Router  
Demo - Router Setup  
Layer 2 Switches  
VLAN Trunking  
Module 13 Review

## **Module 14 - Networking Computers**

Networking Computers  
Network Protocol  
Wireless Network Protocols  
Demo - Install Protocols  
Addressing  
MAC Address  
IPv4  
Classful IPv4 Addresses  
IP Classes  
Parts of an IP Address  
Subnet Masks  
Network IDs  
Special Addresses  
APIPA  
CIDR  
CIDR Address  
  
IPv6  
IPv6 Address Types  
IPv6 Address Scopes  
Default Gateway  
Routing Example  
Character-Based Names  
Domain Name System (DNS)  
Top-level Domains  
Countries As Top Level Domains  
New Top Level Domains  
NetBIOS  
Resolving NetBIOS by Broadcast  
Resolving NetBIOS by WINS  
IPCONFIG  
Example of ipconfig /all Results  
Demo - ipconfig/all (xp)  
Demo - ipconfig /all (Windows 7)  
Ping

Successful Ping  
Steps after Unsuccessful Ping  
Demo - Troubleshooting TCP/IP  
Demo - Ping  
TCP/IP Architecture  
Application-Layer Protocols  
HTTP  
FTP  
Telnet  
E-mail Protocols  
Port Addresses  
Service Port Addresses  
Demo - Netstat  
Static TCP/IP Configuration  
Demo - Configuring TCP/IP  
DHCP and DHCPv6  
The IPv4 Lease Process  
The IPv6 Lease Process  
IPv6 Router Flags  
Wireless Nodes on a Network  
Wireless Connection Components  
Wireless NICs  
Wireless Access Points  
Wireless Speeds  
WAP Configuration  
Securing your AP  
Wireless Authentication Methods  
The 802.1 Protocol  
Demo - Wireless Access Point  
Wireless Auto Configuration  
Wireless Network Problems  
Demo - Wireless Client  
Creating a Dial-up Connection  
Vista Dial-up Connection Wizard  
Vista: Connect to a Workplace  
Dial-up Connection Properties  
Module 14 Review

## **Module 15 - Portable Computers**

Portable Computers  
Notebook Computer  
Typical Notebook Components  
Live Demo - Mini PC Card  
Notebooks  
Netbooks

Notebook Batteries  
Battery Types  
Power Adapters  
Power Indicator Lights  
Notebook Processors  
Notebook Memory  
Notebook Drives  
Accessing the Hard Drive  
Swapping a Removable Drive  
Live Demo - Hot-Swappable Components  
Notebook Keyboard  
LCD Monitors  
Native Resolutions  
Notebook Pointing Devices  
Touchpad  
Handwriting Technology  
Notebook Peripheral Ports  
Live Demo - Inside of Laptop  
Wireless Communication  
Infrared  
IrDA Port  
Radio  
802.11g Wireless Router  
Bluetooth  
Network Connections  
PC Card Types  
Type II PC Card  
Live Demo - Type II PC Card  
PC Card Bus Types  
Inserting and Removing PC Cards  
Card and Socket Services  
Mini PCI Card  
Live Demo - Mini PC Card 02  
Network Adapters and Modems  
Desktop Features  
Port Replicator  
Notebook Computer Issues  
Power Issues  
Demo - Power Management Utility  
Power-Related Measurements  
Replacing the Battery  
Troubleshooting Power Problems  
Maintenance  
Operating Environment  
Transporting a Notebook

Module 15 Review

**Module 16 - Monitoring and Management**

Monitoring and Management

Windows Diagnostics

System Information Window

Remote Computer Information

Demo - Windows Diagnostics

Command-Line System Information

DirectX Diagnostic

DirectX Diagnostic Tool

DirectX Diagnostic Pages

Demo - DirectX Diagnostics

Task Manager

Windows Task Manager

The Applications Tab

Demo - Monitoring Applications

The Processes Tab

The Services Tab

The Performance Tab

Demo - Monitoring Performance

The Networking Tab

The Users Tab

Computer Management

Event Viewer

Event Information

Event Types

Event Properties

Demo - Event Logs

Resource Overview

Detailed View of CPU Resource

Demo - Resource Monitor

Performance Monitor

Performance Monitor Real-Time Graph

Performance Objects

Bottlenecks

Adding Counters

Real-Time Monitoring

Performance Monitor Configuration

Performance Monitor Tabs

The Registry

Registry Keys

Registry Editors

Windows Vista Registry Editor

Registry Searches

Registry Corruption and Backups  
Demo - Registry  
Demo - Registry Backup  
Services and Applications  
Services  
The Services Console  
Service Properties  
Dependencies  
Demo - Services  
Power Management  
Power Option Configuration  
Power Plans  
Demo - Power  
Sleep and Hibernation Modes  
Power Options: Notebooks  
Power Options: Desktops  
Wake Up on LAN  
A NIC'S "Wake Up on LAN" Settings  
Module 16 Review

### **Module 17 - Operating System Troubleshooting**

Operating System Troubleshooting  
Startup Files  
Startup Process  
Startup Messages  
Operating-System Load Errors  
Windows Shutdown Error  
Demo - Startup Messages  
Advanced Startup Options  
Advanced Boot Options Menu  
Demo - Startup Modes  
System Configuration Utility  
Services Page  
Startup Modes for Troubleshooting  
Demo - System Configuration  
Recovery Console  
Folder Access in Recovery Console  
System Recovery Options Menu  
System Recovery Options  
Emergency Repair Disk  
Windows 2000 Professional ERD  
Automated System Recovery  
ASR Tasks  
System Restore  
Vista System Protection

Restoring the System  
System Restore in Vista  
Restore Points in Vista  
System Restore in Windows XP  
Restore Points in XP  
Demo - Creating a Restore Point  
Demo - Restoring a Computer to a Previous State  
Module 17 Review

## **Module 18 - Security**

Security  
User Accounts  
User Names and Passwords  
Password Protection  
Creating Strong Passwords  
Multiple Passwords  
User Account Types  
Groups  
Demo - Local Users and Groups (XP)  
Demo - Vista Local User  
Demo - Active Directory Groups  
Authentication  
Authentication Protocols  
Security Policies  
Password Policies  
Setting Values  
Account Lockout Policy  
Computer vs. Domain  
Demo - Local Security Policies  
Encryption  
Encrypted File System  
Demo - Encryption  
Whole-Disk Encryption  
BitLocker Hardware Requirements  
BitLocker Authentication Modes  
BitLocker Life Cycle  
BitLocker Recovery  
Other Whole-Disk Encryption Systems  
Biometrics  
Biometric Devices  
Pros and Cons of Biometric Devices  
Smart Cards  
Smart Card Components  
Smart Card Use  
Fobs

BIOS Security  
Alleviating Security Risks  
Physical Access Restrictions  
Firewalls  
Firewall Functions  
Hardware Firewall  
Software Firewall  
Proxy Server  
Port and Packet Filters  
Windows Security Center  
Action Center in Windows 7  
Win7 Action Center Indicating a Problem  
Windows Firewall  
Windows Firewall Advanced Settings  
Demo - Configuring Windows Firewall  
Social Engineering Attacks  
Malicious Software  
Protecting Computer Systems  
Data Security and Destruction  
Data Destruction  
Data Migration  
Security Policy Contents  
Locking Windows Vista  
Security Classifications  
Module 18 Review

### **Module 19 - Windows Installation and Upgrades**

Windows Installation and Upgrades  
Installing Windows Operating Systems  
Clean Installation vs. Upgrade  
Pre-Installation Tasks  
File Backup and Transfer  
Windows 7, All Versions  
Windows Vista Home Basic  
Windows Vista Home Premium and Business / Ultimate / Enterprise  
Windows XP Professional / Home  
Windows 2000 Professional  
Windows Media Center  
Hardware Compatibility  
The Upgrade Advisor  
Windows 7 Upgrade Advisor  
Running the Upgrade Advisor  
Windows XP Upgrade Advisor  
Demo - Running the Windows 7 Upgrade Advisor  
Partitions and Formatting

Windows Vista Installation Methods  
Windows 2000 / XP Installation  
Network Installation  
Unattended Installations  
Clean Install of Windows Vista  
Product Keys and Activation  
Windows Update  
Windows Vista Network Locations  
Windows XP / 2000 Installation  
Setup Issues  
Demo - Windows 7 Install  
Post-Installation Tasks  
Devices and Drivers  
Demo - Device Drivers  
Driver Signing  
Windows 7 Upgrade Paths  
Unsupported Upgrades  
Upgrade Between Windows 7 Versions  
Windows Vista Upgrade Paths  
Upgrade Between Vista Versions  
Pre-Windows Vista Upgrades  
Pre-Upgrade Tasks  
Hardware and Software Compatibility  
Upgrade Process  
Upgrades within Windows 7  
Upgrades within Windows Vista  
Upgrade Issues  
Application Compatibility  
Vista Program Compatibility Wizard  
Windows 2000 Application Compatibility  
Microsoft Assessment and Planning Toolkit  
MAP Readiness Reports  
MAP Toolkit Migration Evaluations  
Volume License Customers  
Demo - Upgrading to Windows 7 Ultimate  
Demo - Using the Windows 7 Program Compatibility Wizard  
Module 19 Review

## **Module 20 - Safety and Maintenance**

Safety and Maintenance  
Office Hazards: Floor Surfaces  
Office Hazards: Fire Safety  
Fire Extinguisher Classes  
Fire Extinguisher Types  
Office Hazards: Electrical Safety

Office Hazards: Air Quality  
Computer Hazards  
Physical Hazards  
Laser Printer and Copier Toner  
Electrical Hazards  
Incident Reporting  
High-Voltage Interference: Outside  
High-Voltage Interference: Inside  
Electrostatic Discharge (ESD)  
Electromagnetic Induction (EMI)  
Minimizing High-Voltage Interference  
Shielding and Filtering  
Ventilation, Dust, and Moisture Control  
Printer/Scanner Maintenance  
Power Conditioning  
Cleaning Computer Equipment  
Live Demo - Maintenance  
Material Safety Data Sheets (MSDS)  
MSDS Hazard Ratings  
Personal Protection by Rating  
Ergonomic Workstations  
Laptop Safety  
Computer Equipment Disposal  
Module 20 Review

## **Module 21 - Troubleshooting Hardware**

Troubleshooting Hardware  
Backing Up Files and Folders  
Windows Vista Backup Utility  
Automatic Backups  
Windows XP Backup  
Restoring Data  
Restoring Files in Windows XP  
Demo - Vista Backup  
Hardware Related Symptoms  
Power-Supply Problems  
The Power\_Good Signal  
Troubleshooting Motherboards & CPUs  
Motherboard and CPU Problems  
Memory Problems  
Drive Controller Problems

Video Adapter Problems  
Sound Card Problems  
Modem Problems  
NIC Indicator Lights  
Hard Drive Problems  
CD Drive Problems  
DVD Drive Problems  
Module 21 Review  
Course Closure

**Total Duration: 28h 30m**