Overview

This 5–day course is intended for those wishing to qualify with CompTIA A+ Certification. A+ is a foundation-level certification designed for IT professionals with around 1 year's experience whose job role is focused on PC support.

Successful candidates will have the knowledge required to assemble components based on customer requirements, install, configure and maintain devices, PCs and software for end users, understand the basics of networking and security/forensics, properly and safely diagnose, resolve and document common hardware and software issues, apply troubleshooting skills, provide appropriate customer support, and understand the basics of virtualization, desktop imaging, and deployment.

CompTIA A+ Syllabus

You must take two exams to become A+ Certified. This course is designed to prepare you for the 220-901 A+ exam. It focuses on PC, mobile, printer, and network hardware technologies and support procedures.

Courseware with Integrated Learning from Professor Messer

Professor Messer has long been a web hero for CompTIA certification students. For many years, Professor Messer has provided video-based training courses for CompTIA certifications. With professionally-produced lessons covering the full exam objectives and online forums, Professor Messer is a trusted online source for exam information.

Now, gtslearning has partnered with Professor Messer to take this learning to a new level. You will be able to study from the gtslearning courseware and link to the appropriate training video (by QR code, hyperlink or typing short URL) for further explanation. Equally, a student studying from the Professor Messer video course will be able to easily follow his video presentations using the same CompTIA CAQC Official courseware.

Certification track

This courseware bears the seal of CompTIA Approved Quality Content. This seal signifies this content covers 100% of the exam objectives and implements important instructional design principles. CompTIA recommends multi-learning tools to increase coverage of the learning objectives. The contents of this training material were created for the CompTIA A+ Certification 220-901 exam covering the 2012 Edition A+ certification exam objectives.
Target audience and Course prerequisites

CompTIA A+ certification is aimed at IT professionals with (or seeking) job roles such as Support Engineer, Maintenance Engineer, Desktop Engineer, Computer Administrator, or PC Support Analyst. Ideally, you should have successfully completed gtslearning’s “PC Fundamentals with CompTIA Strata” course or have some basic experience of using a PC, Windows, and browsing the web. Specifically, it is recommended that you have the following skills and knowledge before starting this course:

- Use a keyboard and mouse.
- Recognize the main components of a PC and different data media such as USB drives and DVD.
- Start the computer and navigate the desktop.
- Use Windows Explorer to create directories and subdirectories and manage files.
- Use Internet Explorer to view websites.

Course outcomes

This course will teach you the fundamental principles of installing, configuring, and troubleshooting PC, mobile, printer, and networking device hardware and help you to progress a career in PC support. It will prepare you to take the CompTIA A+ 220-901 exam by providing 100% coverage of the objectives and content examples listed on the syllabus. Study of the course can also help to prepare for other, similar technical support qualifications and act as groundwork for more advanced training, including CompTIA Network+ or CompTIA Server+, CCNA, and MCSE.

The CompTIA A+ credential proves knowledge of ICT features and functions and is the leading vendor-neutral certification for PC support professionals. Worldwide, more than 1 million individuals are CompTIA A+ certified and 31% of IT staff within a random sampling of US organizations within a cross section of industry verticals hold A+ Certification. Indeed, A+ Certification is often a prerequisite qualification for employment and is mandated or recommended by many leading computer manufacturers and vendors, such as Cisco and HP and Ricoh, the US State Department, and US government contractors such as EDS, General Dynamics, and Northrop Grumman.

On course completion, you will be able to:

- Identify types and characteristics of PC, laptop, and mobile device components, including motherboard, CPU, memory, and storage, input, and output devices.
- Install, configure, and troubleshoot peripheral devices and system components.
- Install, configure, and troubleshoot print devices.
- Install, configure, and troubleshoot wired and wireless LAN links and internet access devices.

Course contents

The course consists of a study volume, containing indexed notes and review questions, plus exam objectives mapping, exam information, and a comprehensive glossary. The course also comes with an online practice exam, pre-requisites test, and pre-/post-unit assessment tests plus written scenarios to test your ability to select appropriate technologies and configuration options for given tasks.

An instructor edition of the course is available with margin notes and tips for the trainer. Access to course resources (setup guides and data, PowerPoint slides, timetables, and extra exam information) on gtslearning’s trainer portal is also available, subject to meeting minimum order requirements. A full set of classroom labs is provided to training companies and there are also options for hosted labs and self-paced labs to accompany the course.

Module 1 / Peripherals and Adapters

- Motherboard Components • System Case Types • Disassembling a PC • Motherboard Layout • Bus Architecture Motherboard Components • Expansion Slots • Labs • Identifying PC Components
- Connection Interfaces I/O Ports and Cables • USB Ports • Other Port Types • Expansion Cards • Input Devices • Installing and Configuring Peripherals
- Display Devices • Display Device Types • Comparing Display Devices • Display Connectors and Cable Types • Video Cards • Touchscreens and Digitizers • Troubleshooting Display Problems
• **Audio and Multimedia Devices** • Audio Devices • Imaging Devices • Multimedia Devices • Labs • Identifying PC Ports • Connecting Peripheral Devices • Upgrading the Graphics Adapter

• **Removable Storage Devices** • Storage Devices • Storage Adapters and Cables • Installing Storage Devices • Optical Disc Drives • Flash Drives • Tape Drives

### Module 2 / System Components

• **Mass Storage Devices** • Hard Drives • Solid State Drives • Troubleshooting Hard Drives • Installing RAID Arrays • Troubleshooting RAID • Labs • Adding Storage Devices

• **System Memory** • Random Access Memory (RAM) Types • RAM Configurations • Installing and Upgrading Memory • Labs • Upgrading Memory

• **Processors** • Central Processing Unit (CPU) • CPU Architectures • Other CPU Features • CPU Packaging • Cooling Systems • Installing and Upgrading CPUs

• **BIOS and UEFI** • BIOS and UEFI System Firmware • Configuring Component Properties • Configuring Devices and Boot Properties • Configuring BIOS Security • Upgrading Firmware • Diagnostics and Monitoring • Labs • System Setup

• **Power Supplies** • Electrical Circuits • Power Supply Unit (PSU) • Connector Types and Voltages • Installing a Power Supply Unit

### Module 3 / Troubleshooting and Mobile

• **Troubleshooting System Components** • Troubleshooting Basic Hardware Problems • Troubleshooting Power Problems • Troubleshooting POST • Troubleshooting Motherboard Components • Labs • Removing and Installing FRUs • Testing Hardware Components • Diagnosing System Errors

• **Laptops** • Laptop Types • Laptop Features • Laptop Expansion Options • Laptop Power Supplies

• **Mobile Devices** • Mobile Device Types • Mobile Accessories and Ports

• **Troubleshooting Mobile Devices** • Laptop and Mobile Disassembly Processes • Upgrading Laptop FRUs • Upgrading Laptop System Components • Troubleshooting Mobile Power Problems • Troubleshooting Mobile Display Problems • Troubleshooting Other Mobile Problems • Labs • Removing and Installing Laptop FRUs

### Module 4 / Print and Network Services

• **Printers** • Printer Types • Laser Printers • Inkjet Printers • Impact Printers • Thermal Transfer Printers

• **Configuring Printers** • Installing Printers • Configuring Printers • Sharing and Networking Printers • Labs • Installing a Printer

• **Troubleshooting Printers** • Routine Printer Maintenance • Maintaining Laser Printers • Maintaining Other Printer Types • Troubleshooting Print Errors • Troubleshooting Print Defects • Labs • Printer Maintenance

• **Internet Protocol** • The TCP/IP Suite • Internet Protocol and IP Addressing • Configuring IP • IP Version 6

• **Network Services** • TCP and UDP Ports • Domain Name System (DNS) • Internet Application Services • Other Network Services

### Module 5 / Installing Networks

• **SOHO Networks** • Basic Network Concepts • Wireless Networks • Wireless Network Security • Configuring a SOHO Access Point

• **SOHO Internet Connections** • Internet Connection Types • Legacy Internet Access Methods • Broadband Internet Access Methods • Wireless Internet Access Methods • Configuring a SOHO Router Firewall • Labs • Configuring an Access Point

• **Enterprise Networks** • Network Architecture Devices • Network Cards • Switches and Routers • Twisted Pair Cabling and Connectors • Fiber Optic Cabling and Connectors • Coaxial Cabling and Connectors

• **Troubleshooting Networks** • Installing and Testing Network Cables • Troubleshooting Wired and Wireless Links • Troubleshooting IP • Troubleshooting Routing and Name Resolution • Labs • Troubleshooting Networks

• **Custom Configuration** • Configuring Computers for Business • Configuring Computers for Home Use

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**Course outcomes**

This course will teach you the fundamental principles of installing, configuring, and troubleshooting PC, mobile, printer, and networking device hardware and help you to progress a career in PC support. It will prepare you to take the CompTIA A+ 220-902 exam by providing 100% coverage of the objectives and content examples listed on the syllabus. Study of the course can also help to prepare for other, similar technical support qualifications and act as groundwork for more advanced training, including CompTIA Network+ or CompTIA Server+, CCNA, and MCSE.

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On course completion, you will be able to:

- Install, configure, and troubleshoot the Microsoft Windows, Linux, and Mac OS PC operating systems plus iOS, Android, and Windows mobile devices.
- Configure and manage PC and mobile device network connectivity plus users, groups, and shared resources in a typical SOHO network.
- Use anti-virus tools to prevent and recover from malware infections.
- Configure access control measures, such as authentication, security policy, encryption, and firewalls.
- Perform basic PC maintenance while working safely and responsibly and communicate effectively with customers.

**Course contents**

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Module 1 / Supporting Windows (1)

- **Windows Operating System** • What is an Operating System? • Microsoft Windows 7 • Microsoft Windows 8 • Microsoft Windows Vista • Windows System Requirements • Windows Upgrade Paths • **Labs** • The Windows Desktop

- **Administration Tools** • Control Panel and System Properties • User Account Control • Administrative Tools • Command Prompt and Text Editors • File Explorer • Shut Down • Windows Registry • **Labs** • System Administration Tools

- **Managing Storage** • Disk Partitions • File Systems • Disk Management Tool • Adding Arrays (Dynamic Storage) • Drive Status • Command Line Disk Management • Mount Points and Disk Images • **Labs** • Disk Management

- **Managing Files** • File Explorer • OneDrive • Navigating Directories using a Command Prompt • File Management using a Command Prompt • **Labs** • File Management

- **Managing Applications** • Managing Software • Managing Services • msconfig • Task Manager • Windows 8 Task Manager • **Labs** • Application Management

Module 2 / Supporting Windows (2)

- **Managing Devices** • Configuring Hardware • Device Manager • Display and Sound Settings • Power Options • **Labs** • Device Management

- **Managing Performance** • Viewing System Information • Performance Monitor • Advanced System Properties • **Labs** • System Management Utilities

- **Maintenance and Backup** • Disk Maintenance Utilities • Task Scheduler • Patch Management • Data Backup • Restoring User Profiles • **Labs** • Windows Maintenance Tasks

- **Installing Windows** • Overview of OS Installations • Installation Boot Methods • Preparing the Hard Disk • Completing an Attended Installation • Options for Deploying Windows • **Labs** • Installing Windows

Module 3 / Windows Networking

- **Configuring Network Connections** • Network Card Properties • Establishing Networking Connections • Configuring IP • Establishing Internet Connections • Remote Access Utilities

- **Securing Network Connections** • Configuring the Browser • Network and Host Firewalls • Windows Firewall • Securing SOHO Networks • **Labs** • Network Connections and Windows Firewall

- **Configuring Shared Resources** • Domains • Workgroups and Homegroups • User and Group Accounts • Managing User Accounts • Configuring File and Folder Sharing • NTFS File and Folder Permissions • **Labs** • Windows Homegroup Networking

- **Virtualization** • Virtualization Basics • Purposes of Virtual Machines • Security Requirements • Cloud Computing • Networked Host Services • **Labs** • Windows Domain Networking

Module 4 / Troubleshooting and Security

- **Troubleshooting PC Operating Systems** • Troubleshooting Models • Troubleshooting Procedures • Event Viewer • Windows Error Reporting • Troubleshooting Windows Errors • **Labs** • Event Viewer

- **Troubleshooting Boot Problems** • Troubleshooting Boot Problems • System Restore • Advanced Boot Options Menu • System Repair and Reinstallation • **Labs** • Boot Troubleshooting • Advanced Recovery Options

- **Threats and Vulnerabilities** • Security Fundamentals • Social Engineering • Network Reconnaissance • Network Attack Strategies • Denial of Service

- **Viruses and Malware** • Types of Malware • Anti-Virus Software • Malware Symptoms • Quarantine and Remediation • Preventing Malware Infections • Security Center and Windows Defender • **Labs** • Anti-Virus Software
• **Workstation Security** • Digital Security • Authentication • Password and Account Policies • Workstation Security • Physical Security • **Labs** • Account and Password Policies

• **Data Security** • Data Policies • Corporate Security Policy • Data Encryption • Data Disposal Methods • Incident Response Policies

**Module 5 / Linux, OS X, and Mobile OS**

• **Linux Operating System** • Linux Distros and Shells • Linux Disk and File Management Commands • Securing a Linux File System • Managing Linux User Accounts • Linux Software and Patch Management • Troubleshooting Linux OS • **Labs** • Installing and Configuring Linux

• **OS X** • Apple Macs and OS X • OS X File Management • OS X Users and Passwords • OS X Software Management • OS X Networking • OS X Diagnostic Utilities • OS X Troubleshooting

• **Mobile Operating Systems** • Android, iOS, and Windows Mobile • Features of Mobile Operating Systems • Cellular Data Networks • Wi-Fi and Bluetooth Networks • Mobile Device Synchronization

• **Mobile OS Security and Troubleshooting** • Mobile OS Security • Mobile OS Access Control • Mobile OS Policies • Mobile OS Troubleshooting Tools • Troubleshooting Mobile OS Issues • Troubleshooting Mobile Wireless Issues • Troubleshooting Mobile Security Issues

• **Safety and Environmental Procedures** • Local Government Regulations • Electrical Safety • Cable Management and Lifting Techniques • Component Handling • Environmental Controls • Power Problems • Disposal and Recycling • **Labs** • Implementing an Anti-ESD Service Kit • Cleaning and Preventive Maintenance

• **Professionalism and Communication** • Customer Service Skills • Communication Skills • Professionalism • Handling Customer Complaints