

uCertify

Course Outline

**Complete A+ Guide to IT Hardware and Software
(1101/1102)**



07 Aug 2024

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Here's what you get

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Here's what you get

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1. Course Objective

uCertify's CompTIA A+ (220-1101 & 220-1102) course and lab are designed to enhance the latest knowledge and skills of an IT professional. The course contains interactive tools like CompTIA A+ exam objective-based lessons, test preps, and live labs for a hands-on experience. It will be a great source to learn about Mobile Devices, Networking, Hardware, Virtualization and Cloud Computing, and Hardware and Network Troubleshooting.

2. Pre-Assessment

Pre-Assessment lets you identify the areas for improvement before you start your prep. It determines what students know about a topic before it is taught and identifies areas for improvement with question assessment before beginning the course.

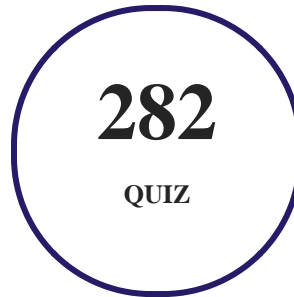
3. Exercises

There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.

558
EXERCISES

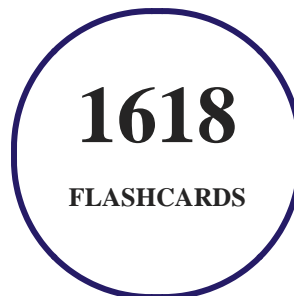
4. Quiz

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.



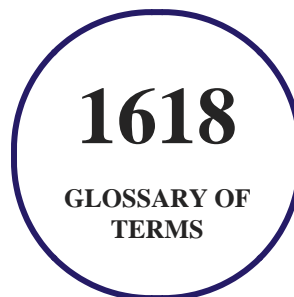
5. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.



6. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.



7. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

8. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

9. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

10. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been

recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**

1. Best Postsecondary Learning Solution

- **2015**

1. Best Education Solution
2. Best Virtual Learning Solution
3. Best Student Assessment Solution
4. Best Postsecondary Learning Solution
5. Best Career and Workforce Readiness Solution
6. Best Instructional Solution in Other Curriculum Areas
7. Best Corporate Learning/Workforce Development Solution

- **2016**

1. Best Virtual Learning Solution
2. Best Education Cloud-based Solution
3. Best College and Career Readiness Solution
4. Best Corporate / Workforce Learning Solution
5. Best Postsecondary Learning Content Solution
6. Best Postsecondary LMS or Learning Platform
7. Best Learning Relationship Management Solution

- **2017**

1. Best Overall Education Solution
2. Best Student Assessment Solution
3. Best Corporate/Workforce Learning Solution
4. Best Higher Education LMS or Learning Platform

- **2018**

1. Best Higher Education LMS or Learning Platform

2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**

1. Best Virtual Learning Solution
2. Best Content Authoring Development or Curation Solution
3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

11. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Introduction

- What's New in the Ninth Edition?
- Organization of the Text
- Features of This course

- CompTIA A+ Exam Objectives

Chapter 2: Introduction to the World of IT

- Who Needs This Course?
- Technician Qualities
- Breaking into IT with the CompTIA A+ Certification
- Basic Skills for This Course
- Types of Computers
- Basic Computer Hardware
- Mice and Keyboards
- Common Peripherals
- 1s and 0s
- Safety Notes
- Lesson Summary
- Activities

Chapter 3: Connectivity

- Introduction to Connectivity

- External Connectivity
- Mouse and Keyboard Ports
- Video Ports
- Audio Ports
- eSATA Ports
- Modem and Serial Ports
- Network Ports
- Network Cabling
- Integrated Motherboard Ports
- Getting to Know Ports
- Wireless Connectivity for Input Devices
- Soft Skills: Using Appropriate Titles
- Lesson Summary
- Activities

Chapter 4: On the Motherboard

- Introduction to the Motherboard
- Processor Overview

- Processor Basics
- Speeding Up Processor Operations Overview
- Clocking
- Cache
- Threading Technology
- Connecting to the Processor
- Multicore Processors
- Graphics Processing Unit (GPU)
- Introduction to Virtualization
- Intel Processors
- AMD Processors
- CPU Sockets
- Processor Cooling
- Installing a Processor
- Upgrading Processors
- Overclocking Processors
- Installing CPU Thermal Solutions
- Troubleshooting Processor Issues

- Expansion Slots
- PCI (Peripheral Component Interconnect)
- AGP (Accelerated Graphics Port)
- PCIe (Peripheral Component Interconnect Express)
- Motherboard Security Options
- Types of Motherboards
- Upgrading and Replacing Motherboards
- Motherboard Troubleshooting
- Soft Skills: Active Listening
- Lesson Summary
- Activities

Chapter 5: Introduction to Configuration

- Configuration Overview
- BIOS Overview
- The Setup Program
- Flash BIOS
- BIOS/UEFI Configuration Settings

- CMOS Memory
- Motherboard Battery
- Firmware Updates: Flashing/Clearing the BIOS/UEFI
- Other Configuration Parameters
- Hardware Configuration Overview
- Installing a USB Device
- Installing an eSATA Card
- Installing a Network Interface Card
- Troubleshooting Configurations
- Soft Skills: A Good Technician Practice: Change Only One Thing At A Time And Document
- Lesson Summary
- Activities

Chapter 6: Disassembly and Power

- Disassembly Overview
- Electrostatic Discharge (ESD)
- Electromagnetic Interference (EMI)
- Tools

- Disassembly
- Reassembly
- Preventive Maintenance
- Basic Electronics Overview
- Power Supply Overview
- Replacing or Upgrading a Power Supply
- Power Protection
- Symptoms of Power Supply Problems
- Soft Skills: Written Communications Skills
- Lesson Summary
- Activities

Chapter 7: Memory

- Memory Overview
- Memory Physical Packaging
- Planning a Memory Installation
- Installing Memory Overview
- Virtual RAM

- Monitoring Memory Usage in Windows
- Older Applications in Windows
- Troubleshooting Memory Problems
- Removable Storage
- Soft Skills: Teamwork
- Lesson Summary
- Activities

Chapter 8: Storage Devices

- Storage Devices Overview
- Hard Drive Overview
- Solid-State Drive (SSD) Overview
- Mechanical Drive Interfaces Overview
- M.2 and NVMe
- PATA, SATA, and SAS Connectivity
- Storage Device Configuration Overview
- System BIOS/UEFI Configuration for Storage Devices
- Hard Drive Preparation Overview

- Windows Disk Management
- Fault Tolerance
- Windows Storage Spaces
- Disk Caching/Virtual Memory
- Troubleshooting Storage Devices Overview
- Data Loss and Corruption
- Troubleshooting New Storage Device Installation
- Troubleshooting Previously Installed Storage Devices
- RAID Issues
- SSD Issues
- Soft Skills: Phone Skills
- Lesson Summary
- Activities

Chapter 9: Video and Multimedia Devices

- Multimedia Devices Overview
- Video Overview
- Video Cards

- Projectors
- Introduction to Audio
- Installing Sound Cards
- Sound Cards Using Windows
- Speakers
- Troubleshooting Sound Problems
- Optical Drive Overview
- Optical Drive Installation
- Troubleshooting Optical Drive Issues
- Scanners
- Other Multimedia Devices
- Soft Skills: Attitude
- Lesson Summary
- Activities

Chapter 10: Printers and Multifunction Devices

- Printer/Multifunction Device Overview
- Categories of Printers

- Impact Printers
- Inkjet Printers
- Laser Printers
- Thermal Printers
- 3-D Printers
- Paper
- Virtual Printing
- Refilling Cartridges, Re-inking Ribbons, and Recycling Cartridges
- Upgrading Printers
- Printer Maintenance
- Printer Installation Overview
- Installing Multifunction Devices
- USB Printer Installation
- Printers in the Windows Environment
- Printer Sharing
- Cloud Printing/Scanning
- General Printer Troubleshooting

- USB-Attached Printer Troubleshooting
- Windows Printer Troubleshooting
- Impact Printer Troubleshooting
- Inkjet Printer Troubleshooting
- Laser Printer Troubleshooting
- Soft Skills: Work Ethics
- Lesson Summary
- Activities

Chapter 11: Mobile Devices

- Mobile Device Overview
- Using Mobile Devices
- Cell Phones
- Mobile Apps
- Mobile Device Wired Connectivity
- Mobile Device Wireless Connectivity
- Mobile Device Email Configuration
- Mobile Device Synchronization and Backup

- Other Mobile Software Tools
- Laptops Overview
- Laptop Hardware
- Laptop Power
- Laptop Repairs Overview
- Laptop Display
- Mobile Device Security
- Mobile Device Travel and Storage
- Mobile Device Troubleshooting Overview
- Soft Skills: A Word about Appearance
- Lesson Summary
- Activities

Chapter 12: Computer Design and Troubleshooting Review

- Design Overview
- Computer System Design
- Motherboard and Associated Component Design
- Power Supply and Case Design

- Storage Subsystem Design
- Audio Subsystem Design
- Display Subsystem Design
- Troubleshooting Overview
- Step 1. Identify the Problem
- Step 2. Establish a Theory of Probable Cause (Question the Obvious)
- Step 3. Test the Theory to Determine the Cause
- Step 4. Establish a Plan of Action to Resolve the Problem and Implement the Solution
- Step 5. Verify Full System Functionality and, If Applicable, Implement Preventive Measures
- Step 6. Document the Findings, Actions, and Outcomes
- Sample Troubleshooting Flowcharts
- Soft Skills: Dealing with Difficult Customers
- Lesson Summary
- Activities

Chapter 13: Internet Connectivity, Virtualization, and Cloud Technologies

- Internet Connectivity Overview
- Dial-up Connectivity

- Cable Modems
- xDSL Modems
- VoIP
- Fiber Networks
- Satellite Modems
- Mobile Connectivity Overview
- Web Browsers
- Basic Web Browser Issues
- Introduction to Virtualization
- Desktop Virtualization Basics
- Cloud Computing
- Soft Skills: Mentoring
- Lesson Summary
- Activities

Chapter 14: Networking

- Networking Overview
- Network Media Overview

- Ethernet Over Power
- Protecting Your Network and Cable Investment
- The OSI Model
- The TCP/IP Model
- Network Addressing
- More IPv4 Addressing
- Wireless Networks Overview
- Wireless Network Standards
- Wireless Network Components
- Wireless Network Design
- Antenna Basics
- Wireless and Wired Client Device Configuration Overview
- Configuring an End Device: IP Addressing
- Adding a Computer to a Windows Domain
- Wireless NIC–Specific Settings
- Advanced NIC Properties
- NIC Configuration When Using Virtualization
- Thin or Thick Client Installation Overview

- Wireless AP/Router Configuration
- WWAN Cellular Configuration
- IoT and Smart Devices
- Network Troubleshooting
- Troubleshooting Cable and DSL Modems
- Networking Multifunction Devices
- Network Servers
- Embedded, SCADA, and Legacy Systems
- Software-Defined Networking
- Network Terminology
- The TCP/IP Model in Action
- More Windows Network Settings
- Introduction to Shared Folders
- Soft Skills: Being Proactive
- Lesson Summary
- Activities

Chapter 15: Introduction to Operating Systems

- Operating Systems Overview
- User Interaction with Operating Systems
- Overview of Popular Operating Systems
- 32-Bit vs. 64-Bit Operating Systems
- Windows 10 and Windows 11 Versions
- Workstation Operating Systems
- Operating Systems for Mobile Devices
- End-of-Life (EOL) Concerns
- Update Limitations
- Compatibility Concerns
- Corporate Operating System Needs
- Basic Windows Usage Overview
- Windows 10 and Windows 11 Desktop Components
- Shortcuts and Tiles
- Recycle Bin
- Interactions Within a Window
- Managing Windows Files and Folders

- Searches and Indexing
- Attributes, Compression, and Encryption
- Introduction to Windows Control Panel Utilities
- Determining the Windows Version
- Windows Registry
- Editing the Windows Registry
- Backing Up Data
- WinRE
- Recovering the Windows OS
- Soft Skills: Staying Current
- Lesson Summary
- Activities

Chapter 16: Introduction to Scripting

- Scripting Overview
- Command Prompt Overview
- Command Prompt Basics
- Moving Around from a Command Prompt

- The md and rd Commands
- Two Useful Commands: del and type
- Copying Files
- The attrib Command
- Why Learn Commands?
- PowerShell
- Other Commands You Should Look Over
- Command Format
- Introduction to Scripting
- Script File Types
- Use Cases for Scripting
- Mitigating Consequences of Scripting
- Environment Variables
- Script Syntax
- Introduction to Script Programming
- Variables
- Data Types
- Examples of Using Variables

- Comments Within Scripts
- Basic Script Constructs
- Decisions: The Selection Structure
- Compound Conditions and Logical Operators
- Loops: The Repetition Structure
- A Brief Look at VBScript and PowerShell
- Soft Skills: Changing Perspective When Troubleshooting
- Lesson Summary
- Activities

Chapter 17: Advanced Windows

- Advanced Windows Overview
- Preinstallation of Windows
- Installation/Upgrade of Windows
- Corporate Windows Deployment
- Verifying the Installation
- Troubleshooting a Windows Installation
- Reloading Windows

- Windows Updates
- Backing Up the Windows Registry and Data
- Configuring Windows Overview
- Configuring Windows
- Adding Devices
- Installing/Removing Software
- Computer Management Console
- System Tools
- User Account Management
- Managing Storage
- Managing Services and Applications
- Data Sources (ODBC)
- Print Management Console
- Overview of the Windows Boot Process
- System Restore
- Windows Recovery Environment (WinRE)
- Startup Settings Menu

- System Configuration Utility
- Task Manager
- Speeding Up the Windows Boot Process
- Troubleshooting the Windows Boot Process
- Black Screen/Video Issues
- Troubleshooting a Service That Does Not Start
- Slow Boot
- Troubleshooting Windows Network Settings
- Windows Reboots/System Instability
- Shutdown Problems
- Summary of Troubleshooting Steps
- Power Options
- Monitoring System Performance
- Supporting Windows Computers Remotely
- Preventive Maintenance for Your Operating System
- Soft Skills: Avoiding Burnout
- Lesson Summary
- Activities

Chapter 18: macOS and Linux Operating Systems

- Introduction to macOS
- Navigating the User Interface
- Basic System Usage, Updates, and Backups
- Management and Troubleshooting Tools
- Utilities
- Introduction to Linux
- Navigating the GNOME User Interface
- Basic System Usage, Updates, and Backups
- Command-Line Interface
- macOS and Linux Best Practices
- Soft Skills: Be Humble
- Lesson Summary
- Activities

Chapter 19: Computer and Network Security

- Security Overview

- Security Policy
- Physical Security
- Logical Security
- Considering the End User
- Licensing
- Security Threats and Vulnerabilities
- Protecting Access to Local and Network Resources
- Permissions
- Folder Options
- Protecting the Operating System and Data
- Internet Security
- Remote Access to Network Devices
- Internet Appliances
- Wireless Network Security Overview
- Security Incident Response
- A Final Word About Security
- Soft Skills: Building Customer Trust
- Lesson Summary

- Activities

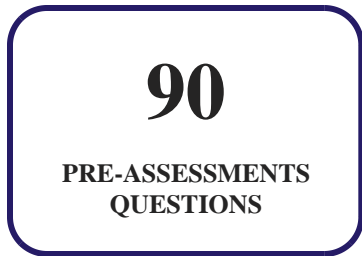
Chapter 20: Operational Procedures

- Operational Procedures Overview
- Proper Power Handling and Adverse Power Conditions
- IT Documentation
- Change Management
- Soft Skills: Skills TO SUCCEED
- Lesson Summary
- Activities

Chapter 21: Appendix A: Subnetting Basics

12. Practice Test

Here's what you get



Features

Each question comes with detailed remediation explaining not only why an answer option is correct but also why it is incorrect.

Unlimited Practice

Each test can be taken unlimited number of times until the learner feels they are prepared. Learner can review the test and read detailed remediation. Detailed test history is also available.

Each test set comes with learn, test and review modes. In learn mode, learners will attempt a question and will get immediate feedback and complete remediation as they move on to the next question. In test mode, learners can take a timed test simulating the actual exam conditions. In review mode, learners can read through one item at a time without attempting it.

13. Live Labs

The benefits of live-labs are:

- Exam based practical tasks
- Real equipment, absolutely no simulations
- Access to the latest industry technologies
- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

Lab Tasks

Introduction to the World of IT

- Disabling a Device Driver
- Enabling a Device Driver
- Configuring the Mouse Settings
- Adding a Keyboard Layout

Connectivity

- Connecting the Hub with Different Devices Using USB Cables
- Installing a PCI Sound Card
- Inserting a Pen Drive into the Laptop's USB Port

On the Motherboard

- Enabling Hardware Virtualization
- Identifying the CPU Socket (Slot)
- Installing a Processor
- Installing Expansion Cards on a Motherboard
- Supplying Power to a SATA Drive
- Identifying a PCI Bus Slot 1
- Installing a USB 3.0 PCI Express Card (2.0 x4)
- Providing Cooling and Ventilation to a Motherboard
- Installing Motherboard Components
- Connecting the Motherboard to the Internal Hard Drive

Introduction to Configuration

- Accessing the BIOS Setup in Windows 10
- Installing the NIC

Disassembly and Power

- Assembling Computer Components
- Replacing the Power Supply

Memory

- Installing Memory Modules
- Verifying the RAM Usage
- Editing a Drive Letter

Storage Devices

- Mounting a Drive to a Folder
- Converting a FAT32 Partition to NTFS
- Converting a Basic Disk to a Dynamic Disk
- Creating a Storage Pool
- Running the Disk Cleanup

Video and Multimedia Devices

- Installing an Optical Drive and a PCI Sound Card

Printers and Multifunction Devices

- Installing a Printer
- Inserting Ink Cartridges into a Printer
- Connecting a USB Printer to a Computer
- Sharing a Printer

Mobile Devices

- Locking an iPhone With a Password
- Removing an Account in Android
- Turning On the Airplane Mode of an iPhone
- Configuring Email in Android

- Viewing the iOS Version of an iPhone
- Inserting a CD in a Laptop
- Connecting a Router to a Laptop
- Installing Laptop Components
- Setting Up a VPN on Android

Computer Design and Troubleshooting Review

- Connecting a Workstation to the LAN and Configuring IPv4 Properties
- Identifying Clients and Servers

Internet Connectivity, Virtualization, and Cloud Technologies

- Connecting the Cable Modem to Access the Internet

Networking

- Configuring a Class C IP Address
- Configuring a Class B IP Address
- Configuring a Class A IP Address
- Configuring an IPv6 Address
- Configuring an IPv4 Address and a DNS Server
- Creating a VLAN and Viewing its Assignment to Port Mapping
- Configuring a DHCP Server
- Adding a DNS Server
- Using the ping Command
- Using the nslookup Command
- Using the ipconfig Command
- Using the tracert and the pathping Command
- Using the net Command
- Using the Sharing Tab

Introduction to Operating Systems

- Implementing EFS File Sharing
- Backing Up the Windows Registry

- Backing Up Files

Introduction to Scripting

- Working with the Command Prompt
- Running Commands on PowerShell
- Creating a Loop in PowerShell
- Executing the Basic Commands Through a ps1 File
- Creating and Running a ps1 File

Advanced Windows

- Setting Automatic Windows Updates
- Creating a Swap Partition
- Creating a Restore Point
- Observing the Control Panel Options from Different Views
- Configuring the Screen Resolution Setting
- Uninstalling a Program
- Configuring Computer Management Services
- Displaying Windows PowerShell Snap-ins
- Adding an MMC Snap-in
- Using Windows Event Viewer
- Using the Task Scheduler
- Configuring UAC Settings
- Viewing the Status of a Disk
- Disabling a Service
- Setting Up a Boot Device Priority
- Monitoring the System's Performance Using Performance Monitor
- Working with the Task Manager
- Using the Task Manager to Start an Application
- Configuring a Power Plan
- Configuring Screen Savers

macOS and Linux Operating Systems

- Viewing Processes in Linux

- Obtaining Software Using the Command-Line Interface
- Using Basic Linux Commands
- Finding Files

Computer and Network Security

- Conducting a DoS Attack Using Smurf Attack
- Performing Reconnaissance on a Network
- Performing a MITM Attack
- Using Rainbow Tables
- Conducting IP Spoofing
- Creating a New User
- Creating an Organizational Unit
- Propagating Permissions
- Stopping Permission Inheritance
- Managing NTFS Permissions
- Sharing a Folder
- Using BitLocker
- Disabling the AutoPlay Feature
- Installing the Proxy Server Feature
- Configuring Windows Defender Firewall
- Configuring Network Address Translation
- Setting up a Demilitarized Zone
- Configuring a VPN

Here's what you get




14. Post-Assessment

After completion of the uCertify course Post-Assessments are given to students and often used in conjunction with a Pre-Assessment to measure their achievement and the effectiveness of the exam.

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