



# CompTIA IT Fundamentals

Course CT-05B

4 Days

Instructor-led, Hands-on

## Introduction

Gain an understanding of the core components that make up the information technology (IT) landscape while preparing for the CompTIA IT Fundamentals exam.

In this introductory course, you will learn the basics of computer hardware, software, mobile computing, networking, troubleshooting, and emerging technologies. You will learn about configuring operating systems, file and folder management, networks and network configuration, and the role of the OSI model in networking and troubleshooting. This course will also prepare you for the CompTIA IT Fundamentals certificate exam.

Through presentations, demonstrations, and knowledge-based exercises, you will gain a fundamental understanding of computer hardware, operating systems, computer application software, networking technologies and protocols, web browsers, identifying security risks, troubleshooting errors, and system maintenance. You will also learn about cutting-edge technologies such as cloud computing and virtualization.

## Audience

The target student is anyone with basic computer user skills who is interested in obtaining a job as an IT professional or PC technician. Possible job environments include mobile or corporate settings with a high level of face-to face client interaction, remote-based work environments where client interaction, client training, operating systems, and connectivity issues are emphasized, or settings with limited customer interaction where hardware activities are emphasized. In addition, this course will help prepare students to achieve a CompTIA A+ Certification.

## At Course Completion

Upon successful completion of this course, students will gain the following skills and knowledge:

- Prepare a study plan for the CompTIA IT Fundamentals exam
- Basic concepts in computer communication
- Basic functions and components of computers
- Common internal hardware components, including processors, storage devices, and RAM
- Peripheral components such as displays, printers, keyboard and other input/output devices, along with the connectors they use
- Basic types of software and considerations for installing, updating, and upgrading software

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- Standard operating system configuration options, file systems, and file and folder management tasks
- Software applications and common file types
- Mobile devices features, mobile operating systems, and working with mobile interfaces
- Common network types, architectures, and topologies
- Basic concepts in network communication, including the OSI reference model, IP addresses, and protocols
- Common LAN and WAN technologies, transmission media, and protocols
- Basic concepts and areas of information security, including authentication, encryption, and firewalls
- Basic concepts and activities for maintaining, monitoring, and troubleshooting computer systems and networks
- Future and developing technologies, such as virtualization, telepresence, and cloud computing

## **Prerequisites**

Basic end-user experience with personal computers and personal computer software is highly desirable.

- IT novices who need a broad, fundamental understanding of IT and who want to learn the basics of computers, computer software, mobile devices, networking, LANs and WANs, data storage, and how IT infrastructures are monitored and managed. Ideal candidates include:
- Entry-level and newly hired technical professionals, including PC support, help desk, and networking professionals
- Sales and marketing professionals looking to increase their ability to communicate with technical professionals and increase sales
- Executives who seek better-informed decision making
- Professionals seeking to prepare for the CompTIA IT Fundamentals Exam

## **Follow-On Course**

CompTIA A+ Certification - Comprehensive for All 2009 Exams Fundamentals of Networking, Course No. CT-01

## **Student Materials**

The student kit includes the following:

- Comprehensive workbook

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## **Course Outline**

### **Module 1: Introduction to Computers and Communications**

- Types of Computers
- Computer Communications
- Bits and Bytes
- Transmission Media
- Signals and Modulation

### **Module 2: Computer Hardware: Inside the Case**

- Why Is This Information Important?
- Motherboard
- Exercise: The Human Computer
- Central Processing Unit
- Random Access Memory
- Internal Storage Devices
- Motherboard Drive Connectors
- Bus Expansion Cards
- Computer Cooling Systems
- Computer Power Supply

### **Module 3: Computer Hardware: Peripheral Devices**

- Why Is This Information Important?
- Input Devices
- Output Devices
- Ports and Connectors
- Removable Media
- Network Storage
- RAID

### **Module 4: Operating System Software**

- Why Is This Information Important?
- What Is an Operating System?
- Early Operating Systems
- Modern Operating Systems
- Mobile Operating Systems
- Operating System Navigation
- Using an OS: Controlling Programs
- Using an OS: Screen Captures
- Using an OS: Configure Accessibility
- Basic OS Configuration
- User Accounts

- Computer File Systems
- Working with File Managers
- Installing and Upgrading an OS
- Licensing and Registration
- Updating an OS
- Exercise: New Life for Old Laptops. Researching Linux Hardware Requirements

## **Module 5: Application Software**

- Why Is This Information Important?
- Types of Application Software
- File Name Extensions
- Installing Application Software
- Types of Software Licenses
- Updating Software Applications
- Upgrading Application Software
- Uninstalling Software Applications
- Exercise: Open Sesame. An Exercise in Matching File Types with Application Programs

## **Module 6: Mobile Computing**

- Why Is This Information Important?
- Mobile Device Characteristics
- Mobile OS: Android and Apple iOS
- Mobile OS: Blackberry and Windows Phone
- Interacting With Mobile Devices
- Controlling with Gestures
- Display Screen Settings
- Lock Screens
- Wireless Connectivity
- Making Wi-Fi Connections
- Making a Bluetooth Connection
- Making an NFC Connection
- Mobile Device Software
- Data Synchronization
- App Stores
- Exercise: Examining Your Mobile Device

## **Module 7: Networks**

- Why Is This Information Important?
- Network Resources
- Types of Networks
- Network Architectures
- Network Topologies

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- Point-to-Point Topology
- Physical Bus Topology
- Ring Topology
- Mesh Topology
- Star Topology
- Mixed Topology

## **Module 8: Network Communications**

- Why is This Information Important?
- The Layered Approach to Networking
- The OSI Networking Model
- The Usefulness of Addressing
- MAC Addresses
- IP Addresses
- Port Numbers
- Domain Names
- Name Resolution
- Communications Protocols
- Protocol Types
- Exercise: What is My Address? An Exercise in Using the Command Window

## **Module 9: Local Area Networks**

- Why is this Information Important?
- Ethernet LANs
- Ethernet Hardware: NIC Card
- Ethernet Hardware: Switches and Hubs
- Ethernet Cabling
- Other Network Hardware
- Wireless LANs
- Reducing LAN Collisions: CSMA/CA
- Wi-Fi Hardware: Access Points
- Wi-Fi Standards
- Wi-Fi Security
- Bluetooth Networking
- Setting Up a SOHO Network

## **Module 10: Wide Area Networks**

- Why Is This Information Important?
- Circuit-Switched WAN Solutions
- Packet-Switched WAN Solutions
- The Internet
- Internet Access Options

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- Internet Access: WiMax
- Internet Access: Cellular Providers
- Internet Access: Satellite
- Summary of Data Connections

## **Module 11: Common Networking Protocols**

- Why Is This Information Important?
- File Transfer Protocol
- Email Protocols
- Hypertext Transfer Protocol
- Secure Sockets Layer
- Domain Name System
- Dynamic Host Configuration Protocol
- Telnet
- Simple Network Management Protocol
- Network Time Protocol
- Exercise: Crossword Puzzle

## **Module 12: Information Security**

- CompTIA Objectives Covered in This Section
- Why is This Information Important?
- Information Security Overview
- Threats and Vulnerabilities
- Information Security Solutions
- Exercise: Recognizing Secure Websites

## **Module 13: Maintaining Computers**

- Why is This Information Important?
- Preventative Computer Maintenance
- Surge Protection
- Ergonomic Computing
- Cleaning Computer Hardware
- Maintaining Software
- Backing-Up Data
- Environmentally Friendly Computing
- Reducing Energy Consumption
- Disposal of Computer Equipment

## **Module 14: Troubleshooting Computers**

- Why is This Information Important?
- Setting-Up a New Computer
- Troubleshooting Computers

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- Common Errors and Problems
- Computer Monitoring Tools
- Researching Problems
- Monitoring and Troubleshooting Networks
- Exercise: Monitor This! An exercise in using Windows Task Manager and Ping

## **Module 15: New and Emerging Technologies**

- Why is This Information Important?
- Virtualization
- Cloud Computing
- Cloud Based Services
- Telepresence
- Keeping Up With New Technology
- Exercise: Researching a New Technology.

## **Module 16: Preparing for the IT Fundamentals Exam**

- CompTIA Certification Programs
- Exam Information
- Preparing For The Exam
- Taking the Exam