

Module 1: Introduction to Computer Hardware

- Overview of computer systems (input, output, processing, storage)
- Types of computers (desktop, laptop, server)
- Motherboard components and architecture
- CPU, RAM, and storage devices (HDD, SSD)
- Power supply units and peripheral devices

Module 2: Assembling & Troubleshooting Hardware

- Steps in assembling a computer system
- Installing and configuring hardware components
- BIOS/UEFI setup and configuration
- Common hardware problems and troubleshooting techniques
- Preventive maintenance and safety practices

Module 3: Operating Systems & Software

- Installing operating systems (Windows, Linux basics)
- Device drivers and utilities
- Disk partitioning and file systems
- System performance monitoring tools
- Backup and recovery methods

Module 4: Networking Fundamentals

- Introduction to computer networks (LAN, WAN, MAN)
- Network topologies (star, bus, ring, mesh)
- Networking devices (switches, routers, hubs, access points)
- IP addressing (IPv4, IPv6) and subnetting basics
- OSI and TCP/IP models explained

Module 5: Network Setup & Configuration

- Setting up wired and wireless networks
- Configuring routers and switches
- Network cabling standards (Ethernet, fiber optics)
- Wi-Fi setup and security
- Sharing files and printers over a network

Module 6: Network Security & Administration

- Firewalls and antivirus tools
- User authentication and access control
- Encryption basics (SSL/TLS, VPNs)
- Common network threats (malware, phishing, DoS attacks)
- Best practices for securing networks

Module 7: Advanced Networking Concepts

- DHCP, DNS, and NAT configuration
- Introduction to server management
- Basics of cloud networking
- Virtualization and virtual networks
- Introduction to network monitoring tools (Wireshark, Nagios)

Module 8: Practical Projects & Assessment

- Assemble and configure a desktop computer
- Install and configure Windows/Linux OS
- Set up a small LAN with file sharing
- Configure a Wi-Fi router with security settings
- Troubleshoot hardware and network issues
- Final project: Build and secure a small office network

Learning Outcomes

By the end of this course, learners will:

- Understand computer hardware components and their functions
- Assemble, configure, and troubleshoot computer systems
- Set up and manage basic networks (wired and wireless)
- Apply networking protocols and IP addressing
- Implement security measures to protect systems and networks
- Gain hands-on experience with real-world hardware and networking tasks