# COMPUTER SYSTEM OPERATION

**Certificate in Computer System Operations & Support**

**Course Code: IT_1003**

**Duration:** 45 Hours

**Delivery Format:** Hybrid

**Target Audience:**

- Entry-level IT technicians
- Helpdesk and support staff
- IT enthusiasts
- Students in IT programs
- Small business owners/employees

**Program Outcomes:**

By the end of this course, learners will be able to:

- Identify and describe the components and functions of computer hardware and software.
- Install and configure operating systems and application software.
- Assemble, disassemble, and maintain computer hardware safely and efficiently.
- Troubleshoot common hardware and software issues using standard diagnostic tools.
- Apply fundamental networking concepts to configure and connect computer systems to networks.
- Perform basic system maintenance and implement preventive measures.

- Ensure data security and system protection through appropriate software and procedures.
- Document system configurations, maintenance tasks, and technical procedures effectively.

**Detailed Syllabus**

**Module 1: Introduction to Computer Systems**

**Outcome:** Learners will be able to identify and describe the components and functions of computer hardware and software.

**Topics:**

- Overview of computer systems
- Classification and functions
- Input, process, output, and storage

**Activities:**

- Discussions on different types of computer systems and their uses.
- Visual identification of common computer components.
- Interactive exercises on the data flow within a computer system.

**Assessments:**

- Short quiz on computer system fundamentals.
- Matching exercise of components to their functions.

**Module 2: Hardware Components and Assembly**

**Outcome:** Learners will be able to assemble, disassemble, and maintain computer hardware safely and efficiently.

**Topics:**

- Internal and external components
- Computer assembly and disassembly
- Safety procedures and handling tools

**Activities:**

- Hands-on practice with disassembling and assembling a computer (simulated or actual if hardware is available).
- Demonstrations and practice of proper tool handling and safety procedures.

**Assessments:**

- Practical assessment of computer assembly/disassembly.
- Checklist evaluation of safety adherence.

### Module 3: Operating System Installation and Configuration

**Outcome:** Learners will be able to install and configure operating systems and application software.

**Topics:**

- Types of operating systems (e.g., Windows, Linux)
- OS installation steps
- System configuration and file management

**Activities:**

- Guided lab exercises on installing a chosen operating system (e.g., Windows or Linux in a virtual machine).
- Practice with basic system configuration and file management tasks.

**Assessments:**

- Practical assessment of OS installation and basic configuration.
- Assignment on file system navigation and management.

### Module 4: Application and Utility Software

**Outcome:** Learners will be able to install and configure application software, manage drivers and updates, and perform basic software troubleshooting.

**Topics:**

- Installing and configuring software
- Managing drivers and updates
- Software troubleshooting

**Activities:**

- Lab exercises on installing various types of application software.
- Practice updating drivers and applying system updates.
- Troubleshooting scenarios involving common software issues.

**Assessments:**

- Practical assessment of software installation and update management.

- Short report on a software troubleshooting scenario.

**Module 5: System Maintenance and Troubleshooting**

**Outcome:** Learners will be able to troubleshoot common hardware and software issues using standard diagnostic tools and perform basic system maintenance and implement preventive measures.

**Topics:**

- Preventive maintenance procedures
- Diagnosing hardware and software problems
- Using troubleshooting tools and techniques

**Activities:**

- Demonstrations and practice of preventive maintenance tasks (e.g., disk cleanup, defragmentation).
- Using diagnostic tools to identify simulated hardware and software faults.
- Case studies on troubleshooting various system problems.

**Assessments:**

- Practical troubleshooting exercise with a simulated faulty system.
- Quiz on preventive maintenance best practices.

**Module 6: Basic Networking Concepts**

**Outcome:** Learners will be able to apply fundamental networking concepts to configure and connect computer systems to networks.

**Topics:**

- Networking fundamentals
- IP addressing and configuration
- Setting up LAN and wireless connections

**Activities:**

- Discussions on network topologies and components.
- Lab exercises on configuring IP addresses and basic network settings.
- Practical setup of a small local area network (LAN) or wireless connection (simulated or actual).

**Assessments:**

- Practical assessment of network configuration.
- Quiz on networking terminology and concepts.

**Module 7: Security and Data Protection**

**Outcome:** Learners will be able to ensure data security and system protection through appropriate software and procedures.

**Topics:**

- System threats and security practices
- Installing antivirus and backup solutions
- User access control and permissions

**Activities:**

- Discussions on common cybersecurity threats and prevention methods.
- Lab exercises on installing and configuring antivirus software and backup solutions.
- Practice managing user accounts and setting file permissions.

**Assessments:**

- Scenario-based questions on security best practices.
- Practical assessment of configuring security settings.

**Module 8: Documentation and Reporting**

**Outcome:** Learners will be able to document system configurations, maintenance tasks, and technical procedures effectively.

**Topics:**

- Logging maintenance and repairs
- Preparing technical reports and SOPs
- Communicating with users and support teams

**Activities:**

- Practice logging maintenance activities and troubleshooting steps.
- Drafting simple technical reports and standard operating procedures (SOPs).
- Role-playing communication scenarios with users and support teams.

**Assessments:**

- Evaluation of documented maintenance logs.

- Review of a drafted technical report or SOP.

**Module 9: Practical Assessments and Final Project**

**Outcome:** Learners will demonstrate overall proficiency in operating, maintaining, and supporting computer systems.

**Activities:**

- Hands-on hardware and software tasks
- Troubleshooting scenarios

**Assessments:**

- Final assessment and project presentation