Course: **Tech+, Computer Repairs and Maintenance**

Contact Hours: **24**

Prerequisite: **Computer Literacy**

Abstract

This practical course allows participants to understand how computers work by focusing on various components and operating systems.

CompTIA Tech+ is the essential certification for anyone exploring a career in tech. It provides you with the foundational knowledge and hands-on skills needed to navigate today's digital world, giving you the confidence to take the first step toward a tech-related career.

CompTIA Tech+ focuses on practical, real-world skills that help you understand core tech concepts, troubleshoot basic issues, and build a strong foundation for future learning and growth in the tech industry.

Target Audience

- IT Technicians
- Help Desk Technicians
- Anyone considering a career in IT

Learning Outcomes

On completion of this course, learners will be able to:

1. Identify IT Tech Concepts and Terminology Concepts and Terminology
2. Classify, set up and install Infrastructure
3. Understand and manage different types of applications and software
4. Identify software development concepts
5. Explain Data and Database Fundamentals
6. Identify and explain security measures

Course Content

1. **Identify IT Tech Concepts and Terminology Concepts and Terminology**
   - Computing basics: input, processing, output, and storage fundamentals.
   - Compare and contrast notational systems
   - Compare and contrast fundamental data types and their characteristics
   - Illustrate the basics of computing and processing
   - Explain the value of data and information
   - Compare and contrast common units of measure
   - Explain troubleshooting methodology: identifying problems, testing theories, implementing solutions, and documenting findings.

2. **Classify, Set Up and Install Infrastructure**
   - Classify common types of input/output device interfaces
   - Set up and install common peripheral devices to a laptop/PC
   - Explain the purpose of common internal computing components
   - Compare and contrast common Internet service types
   - Compare and contrast storage types: volatile vs. non-volatile, local, network, and cloud storage.
   - Compare and contrast common computing devices and their purposes
   - Explain basic networking concepts: LAN vs. WAN, IP/MAC addresses, routers, switches, and firewalls.
   - Install, configure and secure a basic wireless network: 802.11 standards, speed, and interference considerations
   - Computing devices: smartphones, tablets, laptops, servers, IoT devices, and gaming consoles.
   - Internal components: motherboard, CPU, RAM, storage (HDD, SSD, NVMe), NIC, and GPU.
   - Peripheral setup: printers, scanners, monitors, and driver installation.
   - Device interfaces: USB, HDMI, Ethernet, Bluetooth, and NFC.
   - Virtualization and cloud: hypervisors, SaaS, PaaS, IaaS, hybrid, and on-premises models.

3. **Understand and Manage Different Types of Applications and Software**
   - Explain the purpose of operating systems: mobile, desktop, server, embedded systems.
   - Compare and contrast components of an operating system: file systems (NTFS, FAT32), interfaces (GUI, command line), utilities, and drivers.
   - Explain the purpose and proper use of software
   - Explain methods of application architecture and delivery models
   - Configure and use web browsers: private browsing, add-ons, password management, and cache clearing.
   - Software types: productivity tools, collaboration apps, web browsers, and remote support.
   - Artificial intelligence: chatbots, assistants, and generative AI for content and predictions.

4. **Identify Software Development Concepts**
    - Compare and contrast programming language categories: interpreted, compiled, scripting, markup, and assembly.
    - Use programming organizational techniques and interpret logic
    - Explain the purpose and use of programming concepts: variables, constants, arrays, functions, and objects.
    - Data types: char, strings, numbers (integers, floats), and Boolean.
    - Organizational techniques: pseudocode, flowcharts, object-oriented methods, branching, looping.

5. **Explain Data and Database Fundamentals**
    - Explain database concepts and the purpose of a database: relational vs. non-relational, tables, rows, fields, primary/foreign keys.
    - Compare and contrast various database structures
    - Summarize methods used to interface with databases
    - Value of data: data-driven decisions, reporting, and monetization.
    - Database use: queries, reports, scalability, cloud vs. local storage.
    - Backup concepts: file and system backups, local vs. cloud storage.

6. **Identify and Explain Security Measures**
    - Summarize confidentiality, integrity and availability concerns
    - Explain methods to secure devices and best practices
    - Summarize behavioural security concepts confidentiality, integrity, availability, authentication, and authorization.
    - Compare and contrast authentication, authorization, accounting and non-repudiation concepts
    - Explain password best practices: length, complexity, privacy, reuse, and password managers.
    - Explain common uses of encryption: data at rest, data in transit, HTTPS, VPNs, mobile devices.
    - Explain business continuity concepts
    - Device security: anti-malware, firewalls, patching, physical security, safe browsing.

Assessment Criteria

In order to achieve Learning Outcome…	The Learner must…
1. Identify IT Tech Concepts and Terminology Concepts and Terminology	Display understanding of Binary, Hex, Decimal. Differentiate Input, Output, Storage and Processing
2. Classify, set up and install infrastructure	Show capability to Install and identify major hardware Define core networking concepts and identify major networking hardware
3. Understand and manage different types of applications and software	Install and Configure Operating Systems Configure Accessibility Options
4. Identify software development concepts	Conceptualize programming basics. Compare and contrast programming language -Scripting languages -Scripted languages -Markup languages -Compiled programming languages -Query languages -Assembly language
5. Explain Data and Database Fundamentals	Describe database structures - Structured vs. semi-structured vs. non-structured - Relational databases - Non-relational databases
6. Identify and explain security measures	Identify Security Threats Apply Security Best Practices Perform Secure Web Browsing

Essential Learning Resources:

Websites

http://www.comptia.org