

# **CCNA Course Content**

## **1. Introduction to Networking**

- What is Networking?
- LAN, WAN, MAN, and PAN
- OSI Model and TCP/IP Model
- Network Topologies (Star, Bus, Ring, Mesh)
- Introduction to Cisco Devices (Router, Switch, Firewall)

## **2. Network Fundamentals**

- IP Addressing and Subnetting
- IPv4 Address Classes and Private/Public Addresses
- Subnet Masks, CIDR Notation
- Basic IPv6 Concepts
- MAC Address and ARP

## **3. Ethernet and Switching Basics**

- Ethernet Standards and Cabling
- Frame Structure
- Switching Concepts
- MAC Address Table
- Collision Domains and Broadcast Domains

## **4. Switching Technologies**

- VLANs and Trunking
- VLAN Configuration
- VLAN Tagging (802.1Q)
- Inter-VLAN Routing

- Spanning Tree Protocol (STP)
- Rapid Spanning Tree Protocol (RSTP)

## **5. Routing Technologies**

- Router Basics
- Static Routing
- Dynamic Routing Overview
- Routing Protocols:
  - RIP (Routing Information Protocol)
  - OSPF (Open Shortest Path First)
  - EIGRP (Enhanced Interior Gateway Routing Protocol)
- Route Summarization
- Administrative Distance

## **6. IP Services**

- DHCP (Dynamic Host Configuration Protocol)
- NAT (Network Address Translation)
- Port Address Translation (PAT)
- DNS (Domain Name System) Overview
- NTP (Network Time Protocol)
- Syslog and SNMP Basics

## **7. Wireless Networking**

- Wireless Standards (802.11a/b/g/n/ac/ax)
- Wireless Topologies
- Wireless Security Basics
- Configuring Access Points

## **8. Security Fundamentals**

- Threats and Vulnerabilities
- Securing Network Devices
- Access Control Lists (ACLs)
  - Standard and Extended ACLs
- VPN Fundamentals
- Basic Firewall Concepts

## **9. Automation and Programmability**

- Introduction to Network Automation
- APIs and Controllers (basic idea)
- Cisco DNA Center
- Software-Defined Networking (SDN) Basics
- Configuration Management Tools Overview (Ansible, Puppet, Chef basics)

## **10. Infrastructure Services**

- QoS (Quality of Service) Basics
- High Availability Concepts (HSRP, VRRP)
- IP SLA Overview

## **11. Infrastructure Management**

- Device Management (Telnet, SSH)
- Backing up and Restoring Configurations
- Upgrading Cisco IOS Software
- Licensing Basics

## **12. Hands-on Labs and Projects**

- Setting up a basic network in Packet Tracer or GNS3
- Configuring VLANs and Trunks
- Setting up RIP, OSPF Routing
- Configuring DHCP and NAT
- Setting up Basic ACLs for security
- Wireless Access Point setup simulation