# 📘 CompTIA Network+ – 5 Weeks Curriculum

## WEEK 1 – Networking Foundations

### Class 1 – Introduction to Networking & Packet Tracer

**Theory:**

- What is a Computer Network?
- Network Types: LAN, WAN, MAN
- Common Devices: Router, Switch, Hub, Access Point
- Importance of Packet Tracer and Network Simulations

**Practical:**

- Install Cisco Packet Tracer and NetAcad Account
- Explore Packet Tracer Interface
- Build a simple LAN (2 PCs, 1 Switch)
- Assign IP Addresses and test with ping

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### Class 2 – Network Models & Standards

**Theory:**

- The OSI Reference Model – Part 1 & 2
- The OSI Reference Model – Part 3
- Request for Comments (RFCs)
- Client-server vs Peer-to-Peer Networking

**Practical:**

- Create a Client-Server Network in Packet Tracer
- Configure static IP addresses for Client and Server
- Test connectivity with ping and HTTP service

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# WEEK 2 – Network Media & Topologies

## Class 3 – Network Topologies & Cabling

**Theory:**

- Physical and Logical Topologies
- Types of Network Cabling (UTP, STP, Fiber)
- Ethernet Standards
- Patch Panels & Punch-down Blocks

**Practical:**

- Simulate different topologies (Star, Bus, Mesh) in Packet Tracer
- Create a small network with different cabling setups
- Test connectivity using ping and traceroute

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## Class 4 – Ethernet & IP Addressing Basics

**Theory:**

- IP Addressing Concepts (IPv4)
- Classes of IP Addresses (A, B, C, D, E)
- Public vs Private IP Addresses
- Subnet Masks and Default Gateway

**Practical:**

- Configure IPv4 addresses on PCs and Routers in Packet Tracer
- Verify configuration using `ipconfig` and `ping`
- Create a network with 2 subnets connected via a Router

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# WEEK 3 – Routing & Subnetting

## Class 5 – Subnetting & VLSM

**Theory:**

- What is Subnetting?
- Creating Additional Subnets
- Addressing Hosts in a Subnet
- Variable Length Subnet Masking (VLSM)

**Practical:**

- Subnet a given Class C network
- Assign subnets to multiple LAN segments in Packet Tracer
- Configure router interfaces with subnets and test connectivity

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## Class 6 – Routing Fundamentals

**Theory:**

- What is Routing?
- Static vs Dynamic Routing
- Interior Gateway Protocols (IGP)
- Exterior Gateway Protocols (EGP)
- Inter-Domain Routing

**Practical:**

- Configure **Static Routes** between two routers in Packet Tracer
- Verify routes using `tracert` and router CLI commands
- Build a simple network with 2 routers and multiple LANs

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# WEEK 4 – Advanced Networking Protocols

## Class 7 – IPv6 & Advanced Addressing

**Theory:**

- Introduction to IPv6
- IPv6 Address Structure
- Types of IPv6 Addresses (Unicast, Anycast, Multicast)
- Transition from IPv4 to IPv6

**Practical:**

- Configure IPv6 addresses on PCs and Routers in Packet Tracer
- Test connectivity using IPv6 ping
- Simulate Dual-Stack IPv4 & IPv6 Network

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## Class 8 – Ports, Protocols & Services

**Theory:**

- Common Ports & Protocols (HTTP, HTTPS, FTP, SSH, DNS, DHCP, SNMP, SMTP, POP3, IMAP)
- Role of DNS in Networking
- DHCP and IP Address Management (IPAM)

**Practical:**

- Configure a **DHCP Server** in Packet Tracer to auto-assign IPs
- Configure a **DNS Server** in Packet Tracer
- Test domain name resolution with ping (e.g., `ping server.local`)

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# WEEK 5 – Virtualization, Cloud & Review

## Class 9 – Virtualization & Cloud Networking

**Theory:**

- What is Virtualization?
- Cloud Computing Services (IaaS, PaaS, SaaS)
- Cloud Deployment Models (Private, Public, Hybrid, Community)

**Practical:**

- Simulate a **virtualized network lab** in Packet Tracer (multiple routers, switches, PCs)
- Demonstrate how virtualization can replace physical hardware for training

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## Class 10 – Final Lab & Review

**Theory:**

- Recap of Networking Basics → Advanced Concepts
- Troubleshooting Methodology
- Preparing for CompTIA Network+ Exam

**Practical (Final Lab):**

- Build a complete **enterprise-style network** in Packet Tracer:
    - Multiple LANs (different subnets)
    - Routers with Static/Dynamic Routing
    - DHCP Server for IP allocation
    - DNS Server for name resolution
    - Test end-to-end connectivity (ping, tracert, HTTP access)

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