**Tech's Networking Course**

**Introduction**

Welcome to Shea's Tech's Networking Course! In this course, you'll gain foundational knowledge and hands-on skills essential for success in the CCNA certification. This certification represents a recognized standard in networking, ensuring that you’re well-prepared to design, secure, and maintain network infrastructures in today’s technology-driven environments.

Throughout this course, you'll learn to recognize and work with various network components, understand key concepts like TCP/IP protocols, and configure Cisco devices. This course also covers advanced topics, including virtual networking, security, and network programmability—equipping you with skills that extend beyond traditional network management.

**What You’ll Learn**

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

1. **Identify Network Components**: Recognize the various components of a computer network and understand their functions.
2. **Understand Host Communication**: Grasp the host-to-host communication model and how data is transmitted.
3. **Explore Cisco IOS® Software**: Gain insight into Cisco's Internetwork Operating System (IOS®) and its functionalities.
4. **Learn About LANs and Switching**: Describe Local Area Networks (LANs) and the roles that switches play within them.
5. **Understand Ethernet and TCP/IP**: Learn about Ethernet as the network access layer of TCP/IP and the operation of switches.
6. **Set Up a Switch**: Perform installation and initial configuration on a switch.
7. **Explore the Internet Layer in TCP/IP**: Understand IPv4, including IP addressing and subnetting.
8. **Understand TCP/IP’s Transport and Application Layers**: Identify the roles of these layers in the TCP/IP suite.
9. **Explore Routing Fundamentals**: Recognize the essential functions and benefits of routing.
10. **Configure a Cisco Router**: Carry out initial setup and configuration of a Cisco router.
11. **Examine Host-to-Host Communications Across Devices**: Learn how data is transmitted across switches and routers.
12. **Diagnose Network Issues**: Identify and resolve common issues in network switching and IPv4 addressing.
13. **Explore IPv6 Fundamentals**: Understand IPv6 features, addressing, and basic connectivity checks.
14. **Utilize Static Routing**: Explain and implement static routing, discussing its uses and limitations.
15. **Implement VLANs and Trunking**: Describe, configure, and verify VLANs and trunk connections.
16. **Set Up Inter-VLAN Routing**: Learn how to configure routing between VLANs.
17. **Understand Dynamic Routing Protocols**: Familiarize yourself with key protocols like OSPF in dynamic routing.
18. **Explain Spanning Tree Protocols (STP and RSTP)**: Describe STP and RSTP and their role in preventing network loops.
19. **Configure Link Aggregation with EtherChannel**: Set up link aggregation to improve bandwidth and redundancy.
20. **Layer 3 Redundancy Protocols**: Understand redundancy protocols designed to provide fault tolerance at Layer 3.
21. **WAN and VPN Essentials**: Describe foundational concepts in Wide Area Networks (WAN) and Virtual Private Networks (VPN).
22. **Learn Access Control Lists (ACLs)**: Understand and apply ACLs to secure and manage traffic in networks.
23. **Configure DHCP and NAT**: Set up Dynamic Host Configuration Protocol (DHCP) for client IP addressing and Network Address Translation (NAT) on Cisco routers.
24. **Quality of Service (QoS) Basics**: Understand QoS and its importance in traffic prioritization.
25. **Wireless Network Fundamentals**: Explore wireless network types and the functionality of Wireless LAN Controllers (WLCs).
26. **Network Architectures and Virtualization**: Describe network architectures and concepts in virtualization.
27. **Understand Network Programmability and SDN**: Delve into network programmability, Software-Defined Networking (SDN), and Cisco solutions like DNA Center™ and SD-WAN.
28. **Use Cisco IOS Monitoring Tools**: Learn to configure and use basic monitoring tools within Cisco IOS.
29. **Device Management**: Discover best practices for managing Cisco network devices.
30. **Analyze the Security Threat Landscape**: Understand common security threats in networking.
31. **Deploy Threat Defense Technologies**: Gain insights into technologies that help defend networks from threats.
32. **Basic Security Configurations**: Implement security configurations to secure device management.
33. **Hardening Network Devices**: Learn essential techniques to enhance the security of network equipment.

This comprehensive course is structured to provide both theoretical knowledge and practical experience, preparing you for the CCNA examination and a successful career in networking. Let’s begin this journey towards mastering networking fundamentals and Cisco technologies!