CCNA Exam Objctives (200-301)	Course Name	Supplental Course Name
1.0 Network Fundamentals		
1.1 Explain the role and function of network components		
1.1a Routers	Configuring a Cisco Router	Routing IPv4 and IPv6
1.1b L2 and L3 Switches	Ethernet Operation and Switch Configuration	VLAN Operation and Configuration
1.1c Next Generation Firewalls and IPS	Basic Security Concepts for Cisco Networks	
1.1d Access Points	Cisco Wireless Basic Operation and Configuration	
1.1e Controllers (Cisco DNA center and WLC)	Introduction to Cisco Automation and Software Defined Networks	Cisco Wireless Basic Operation and Configuration
1.1f Endpoints	Introduction to Networking for CCNA	
1.1g Servers	Introduction to Networking for CCNA	
1.2 Describe characteristics of network topology architectures		
1.2a 2 tier	Cisco Topologies and Troubleshooting for CCNA Studies	
1.2b 3 tier	Cisco Topologies and Troubleshooting for CCNA Studies	
1.2c Spine-leaf	Introduction to Cisco Automation and Software Defined Networks	
1.2d WAN	Wide Area Networking and VPN Operation	
1.2e Small office/home office (SOHO)	Cisco Topologies and Troubleshooting for CCNA Studies	
1.2f On-Premises and Cloud	Cisco Topologies and Troubleshooting for CCNA Studies	
1.3 Compare physical interface and cabling types		
1.3a Single-mode fiber, multimode fiber, copper	Ethernet Operation and Switch Configuration	
1.3b Connections (Ethernet shared media and point-to-point)	Ethernet Operation and Switch Configuration	
1.3c Concepts of PoE	Pending Addition to Series	
1.4 Identify interface and cable issues		
(collisions, errors, mismatch duplex, and/or speed)	Cisco Topologies and Troubleshooting for CCNA Studies	
1.5 Compare TCP to UDP	TCP and UDP Operation	
1.6 Configure and verify IPv4 addressing and subnetting	Network Layer Addressing and Subnetting	
1.7 Describe the need for private IPv4 addressing	Network Layer Addressing and Subnetting	Introduction to Networking for CCNA
1.8 Configure and verify IPv6 addressing and prefix	Network Layer Addressing and Subnetting	
1.9 Compare IPv6 address types		
1.9a Globlal unicast	Network Layer Addressing and Subnetting	
1.9b Unique local	Network Layer Addressing and Subnetting	
1.9c Link local	Network Layer Addressing and Subnetting	
1.9d Anycast	Network Layer Addressing and Subnetting	
1.9e Multicast	Network Layer Addressing and Subnetting	
1.9f Modified EUI 64	Network Layer Addressing and Subnetting	
1.10 Verify IP parameters for Client OS (Winows, Mac OS, Linux)	Network Layer Addressing and Subnetting	Cisco Topologies and Troubleshooting for CCNA Studies
1.11 Describe Wireless Principles		
1.11a Nonoverlapping Wi-Fi channels	Cisco Wireless Basic Operation and Configuration	
1.11b SSID	Cisco Wireless Basic Operation and Configuration	
1.11c RF	Cisco Wireless Basic Operation and Configuration	
1.11d Encryption	Cisco Wireless Basic Operation and Configuration	
1.12 Explain virturalization fundamentals (virtual machines)	Cisco Topologies and Troubleshooting for CCNA Studies	
1.13 Describe switching concepts	Ethernet Operation and Switch Configuration	
2.0 Network Access		
2.1 Configure and verify VLANs (normal range) spanning multiple switches		
2.1a Access ports (data and voice)	VLAN Operation and Configuration	Building Hardware Labs for CCNA Study
2.1b Default VLAN	VLAN Operation and Configuration	
2.1c Connectivity	VLAN Operation and Configuration	
2.2 Configure and verify interswitch connectivity		
2.2a Trunk ports	VLAN Operation and Configuration	
2.2b 802.1Q	VLAN Operation and Configuration	
2.2c Native VLAN	Securing the Switch	
2.3 Configure and verify Layer 2 discovery protocols (CDP and LLDP)	Cisco Topologies and Troubleshooting for CCNA Studies	
2.4 Configure and veify (Layer 2/Layer 3) EtherChannel (LACP)	STP and EtherChannel Operation and Configuration	

#	Topic		
2.5	Describe the need for and basic operations of Rapid PVST+ and STP		
2.5a	Root port, root bridge (primary/secondary), and other port names	STP and EtherChannel Operation and Configuration	
2.5b	Port states (forwarding/blocking)	STP and EtherChannel Operation and Configuration	
2.5c	PortFast benefits	STP and EtherChannel Operation and Configuration	
2.6	Compare Cisco Wireless Architecures and AP modes	Cisco Wireless Basic Operation and Configuration	
2.7	Describe physical infrastructure connections of WLAN components		
	(AP, WLC, access/trunk ports, and LAG)	Cisco Wireless Basic Operation and Configuration	
2.8	Describe AP and WLC management access connections		
	(Telnet, SSH, HTTP, HTTPs, console, and TACACS+/RADIUS)	Cisco Wireless Basic Operation and Configuration	
2.9	Configure the components of a wireless LAN access for client connectivity		
	using GUI only such as WLAN creation, security settings, QoS profiles, and advanced WLAN settings	Cisco Wireless Basic Operation and Configuration	

3.0 IP Connectivity

#	Topic		
3.1	Interpert componetns of routing table		
3.1a	Routing Protocol Code	Introduction to Dynamic Routing	
3.1b	Prefix	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.1c	Network Mask	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.1d	Next Hop	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.1e	Administrative Distance	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.1f	Metric	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.1g	Gateway of last resort	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.2	Determine how a router makes a forwarding decision by default		
3.2a	Longest Match	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.2b	Administrative Distance	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.3c	Routing Protocol Metric	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.3	Configure and verify IPv4 and IPv6 Static Routing		
3.3a	Default route	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.3b	Network route	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.3c	host route	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.3d	floating static route	Routing IPv4 and IPv6	Introduction to Dynamic Routing
3.4	Configure and verify single area OSPFv2		
3.4a	nieghbor adjacencies	Introduction to Dynamic Routing	
3.4b	point to point	Introduction to Dynamic Routing	
3.4c	broadcast (DR/BDR selection)	Introduction to Dynamic Routing	
3.4d	Router ID	Introduction to Dynamic Routing	

4.0 IP Services

#	Topic		
4.1	Configure and verify inside source NAT using static pools	Network Address Translation Operation and Configuration	
4.2	Configure and verify NTP operating in client server mode	Implementing ApplicationLayer Protocols for Cisco Networks	
4.3	Explain the role of DHCP and DNS within the network	Implementing ApplicationLayer Protocols for Cisco Networks	
4.4	Explain the function of SNMP in network operations	Network Services for Cisco CCNA	
4.5	Describe the use of syslog features including faciliites and levels	Implementing ApplicationLayer Protocols for Cisco Networks	
4.6	Configure and verify DHCP client and relay	Implementing ApplicationLayer Protocols for Cisco Networks	
4.7	Explain the forwarding per-hop behavior (PHB) for QoS	Network Services for Cisco CCNA	
4.8	Configure network devices for remote access using SSH	Configuring a Cisco Router	Ethernet Operation and Switch Configuration
4.9	Describe the capabilities and function of TFTP/FTP in the network	Configuring a Cisco Router	

5.0 Security Fundamentals

#	Topic		
5.1	Define key security concepts (threats, vulnerabilities, exploits and mitigation)	Basic Security Concepts for Cisco Networks	
5.2	Describe security program elements		
	(user awareness, training and physical access control)	Basic Security Concepts for Cisco Networks	
5.3	Configure device access control using local passwords	Basic Security Concepts for Cisco Networks	
5.4	Describe security password policy elements		
	management, complexity, password alternatives,	Basic Security Concepts for Cisco Networks	
5.5	Describe remote access and site to site VPN	Basic Security Concepts for Cisco Networks	
5.6	Configure and Verify ACLs	Building, Configuring, and Troubleshooting ACLs	

5.7	Configure L2 security features		
	(DHCP snooping, dynamic ARP inspection, and port security)	Securing the Switch	
5.8	Differentiate authentication, authorization, and accounting concepts	Basic Security Concepts for Cisco Networks	
5.9	Describe wireless secrity protocols (WPA, WPA2, WPA3)	Cisco Wireless Basic Operation and Configuration	
5.10	Configure WLAN using WPA2 PSK using the GUI	Cisco Wireless Basic Operation and Configuration	
6.0 Automation and Programmability			
6.1	Explain how automation impacts network management	Introduction to Cisco Automation and Software Defined Networks	
6.2	Compare traditional networks with controller based networking	Introduction to Cisco Automation and Software Defined Networks	
6.3	Describe controller-based and software defined architectures		
	Overlay, Underlay, Fabric	Introduction to Cisco Automation and Software Defined Networks	
6.3a	Separation of control plane and data plane	Introduction to Cisco Automation and Software Defined Networks	
6.3b	North-bound and South-bound APIs	Introduction to Cisco Automation and Software Defined Networks	
6.4	Compare traditonal campus device management with Cisco DNA Center	Introduction to Cisco Automation and Software Defined Networks	
6.5	Describe characteristics of REST-base APIs		
	CRUD, HTTP verbs, and data encoding	Introduction to Cisco Automation and Software Defined Networks	
6.6	Recognize the capabilities of configuration management mechanisms		
	Puppet, Chef, and Ansible	Introduction to Cisco Automation and Software Defined Networks	
6.7	Interpert JSON encoded data	Introduction to Cisco Automation and Software Defined Networks	