

Inver Hills Community College

ITC 2621: Cisco Enterprise Advanced Routing and Services (CCNP 2)

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites:

This course requires either of these prerequisites

ITC 2536 - Enterprise Networking, Security, Automation, and Core Technologies

ITC 2611 - Cisco Enterprise Network Core Technologies (CCNP 1)

Corequisites: None

MnTC Goals: None

Explores the implementation and troubleshooting of advanced routing technologies and services. These include: extensive routing protocol troubleshooting, VPN services including DMVPN, infrastructure security troubleshooting, infrastructure services, and infrastructure automation. This course is designed to prepare students for the Implementing Cisco Enterprise Advanced Routing and Services (ENARSI) CCNP exam and is the second in a series of two courses preparing for the CCNP Enterprise certification.

B. COURSE EFFECTIVE DATES: 07/31/2020 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Enterprise Network Layer 3 Technologies & Troubleshooting 35%
Enterprise Network VPN Technologies 20%
Enterprise Network Infrastructure Security & Troubleshooting 20%
Enterprise Network Infrastructure Services Troubleshooting 25%

D. LEARNING OUTCOMES (General)

1. The student will be able to:
 - Troubleshoot administrative distance (all routing protocols)
 - Troubleshoot route map for any routing protocol (attributes, tagging, filtering)
 - Troubleshoot loop prevention mechanisms (filtering, tagging, split horizon, route poisoning)
 - Troubleshoot redistribution between any routing protocols or routing sources
 - Troubleshoot manual and auto-summarization with any routing protocol
 - Configure and verify policy-based routing
 - Configure and verify VRF-Lite
2.
 - Describe Bidirectional Forwarding Detection
 - Troubleshoot EIGRP (classic and named mode)
 - Troubleshoot OSPF (v2/v3)
 - Troubleshoot BGP (Internal and External)
 - Describe MPLS operations (LSR, LDP, label switching, LSP)
 - Describe MPLS Layer 3 VPN
 - Configure and verify DMVPN (single hub)
 - Troubleshoot device security using IOS AAA (TACACS+, RADIUS, local database)
 - Troubleshoot router security features: IPv4 access control lists (standard, extended, time-based), IPv6 traffic filter, Unicast reverse path forwarding (uRPF)
3.
 - Troubleshoot control plane policing (CoPP) (Telnet, SSH, HTTP(S), SNMP, EIGRP, OSPF, BGP)
 - Describe IPv6 First Hop security features (RA guard, DHCP guard, binding table, ND inspection/snooping, source guard)
 - Troubleshoot device management: Console, VTY, Telnet, HTTP, HTTPS, SSH, SCP, (T)FTP
 - Troubleshoot SNMP (v2c, v3)
 - Troubleshoot network problems using logging (local, syslog, debugs, conditional debugs, timestamps)
 - Troubleshoot IPv4 and IPv6 DHCP (DHCP client, IOS DHCP server, DHCP relay, DHCP options)
4.
 - Troubleshoot network performance issues using IP SLA (jitter, tracking objects, delay, connectivity)
 - Troubleshoot NetFlow (v5, v9, flexible NetFlow)
 - Troubleshoot network problems using Cisco DNA Center assurance (connectivity, monitoring, device health, network health)

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted