Course Description

ITN 250 - Includes instruction focusing on the characteristics of various Routing protocols used in the TCP/IP networking environment, static routing, OSPF, IGRP, EIGRP, IS-IS, BGP, advanced IP addressing, and security. Course content also examines various strategies for optimizing network routing performance. Lecture 4 hours per week.

Recommended Pre-requisites

Student should:
be a Cisco Certified Network Associate (CCNA),
or, have successfully completed ITN157 WAN Technologies – Cisco,
or have successfully completed TEL251 Internetworking 4,
or, have successfully completed CCNA Semester 4 training at a Cisco Network Academy,
or, have instructor’s permission.

Course Objectives

Upon completion of this course, the student will be able to:
- Selecting and configuring scalable IP addresses
- Configure the RIP version 2 routing protocol
- Configure the EIGRP routing protocol
- Configure Open Shortest Path First protocol in a multi-area environment
- Configure the IS-IS routing protocol
- Develop route filtering and policy routing
- Configure route redistribution
- Describe the Border Gateway Protocol (BGP)
- Configure and troubleshoot the BGP routing protocol

Course Content

- Overview of Scalable Internetworks
- Advanced IP Addressing Management
- Routing Overview
- Routing Information Protocol Version 2
- EIGRP
- OSPF
- IS-IS
- Route Optimization
- BGP

Student Learning Outcomes

Selecting and configuring scalable IP addresses
Understand the issues of IP address exhaustion
Be able to explain the benefits of hierarchical addressing and routing
Demonstrate the ability to allocate IP addresses using VLSM
Configure a router to conserve IP addresses using IP Unnumbered, NAT, and DHCP

RIP Version 2
Understand RIP Version 2 operation
Be able to configure RIP Version 2 on the router
Be able to monitor and troubleshoot the RIP Version 2 protocol

EIGRP
Explain the concepts involved in using EIGRP
Be able to describe the operation of EIGRP
Be able to configure EIGRP on the router
Be able to monitor and troubleshoot the EIGRP routing protocol

**OSPF**
- Explain the concepts involved in using OSPF
- Understand OSPF operation
- Be able to configure OSPF on the router in a single and multiple areas
- Be able to monitor and troubleshoot the OSPF protocol while it is running.
- Design the layout of an OSPF Internetwork

**IS-IS**
- Explain the concepts involved in using IS-IS
- Be able to describe the operation of IS-IS
- Be able to configure IS-IS on the router
- Be able to monitor and troubleshoot the IS-IS routing protocol

**Route Filtering and Policy Routing**
- Explain the reasons for filtering routing updates
- Configure the router to use filtering techniques, such as passive interfaces, and null routes.
- Be able to use Route maps to implement routing policy
- Be able to verify and trouble-shoot policy routing

**Route Redistribution**
- Explain the benefits of route redistribution
- Configure route redistribution using OSPF, EIGRP, IGRP, and RIP
- Be able to use static routes, default routes, and connected routes to control traffic
- Be able to redistribute classful routing protocols into classless protocols
- Be able to monitor and troubleshoot redistribution

**BGP**
- Explain the operation of BGP
- Be able to explain BGP neighbor relationships
- Be able to explain the relationship between BGP, CIDR, and Aggregate addresses.
- Configuring and Troubleshooting BGP routing protocol