

COURSE OUTLINE

ELEC-262

Advanced Router Configuration

3 Semester Hours

HOWARD COMMUNITY COLLEGE

Description

This course covers Wide Area Networking concepts, components, services, connectivity options and protocols. Students will have hands-on experience in connecting, configuring, managing complex internetwork using routers. Students will become familiar with Cisco diagnostic tools and commands to manage the internetwork efficiently. This course will help to prepare for exams associated with CCIE (Cisco Certified Internetwork Expert) certification. Prerequisite: ELEC-261. (2 hours lecture, 3 hours lab)

Overall Course Objectives

Upon completion of this course, the student will be able to:

1. Study networking in a Wide Area Networking environment.
2. Identify the complexity and scalability of internetworking.
3. Describe Wide Area Networking transmission equipment.
4. Examine data traffic in LAN/WAN interconnection.
5. Examine Wide Area Network services.
6. Explain remote access network protocols.
7. Manage remote access networking.
8. Configure Cisco router for OSPF, IGRP routing protocols.
9. Use Cisco router management tools to maximize network efficiency.
10. Use Cisco access list controls to increase internetwork data integrity.
11. Examine future trends and services in a Wide Area Networking environment.

Major Topics

- I. Wide Area Networking Concepts
 - A. WAN Components and Construction
 - B. WAN Characteristics

- II. Complexity and Scalability of Internetworking
 - A. Router Components
 - B. Interface Configuration
 - C. Internetworking Components
 - D. Internetworking LANs, WANs, MANs

- III. Wide Area Transmission Equipments or Components
 - A. Modems, DSUs, CSUs, Nodes
 - B. Phone, Centrex, PBX, Key System
 - C. Physical Transmission Options - Physical Media, Channelized vs. Non-Channelized, DDS, T1 and FT1 Options

- IV. Data Traffic: LAN/WAN
 - A. Bridged Network
 - B. Routers and Gateways
 - C. Traffic Flow Management
 - D. Network Management With SNMP
 - E. Switching into WAN

- V. Wide Area Network Services
 - A. T1/T3
 - B. ISDN
 - C. Frame Relay
 - D. ATM
 - E. Advantages and Disadvantages of Private Networks and Shared Protocol Networks

- VI. Remote Access Protocols
 - A. PPP Dial-Up
 - B. Multilink PPP
 - C. Dedicated Options: Digital Data Services
 - D. Switched Network
 - E. PCS Technology
 - F. Interoperability and Compatibility Issues
 - G. WAN access: Link Protocols: SLIP, HDLC, PPP, MLPP
 - H. Cisco Router Configuration for OSPF, IGRP Protocols

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will be calculated on the basis of tests, lab reports, quizzes and final exam. This course includes a comprehensive final exam.

Writing: Each week, students are expected to write a laboratory report after performing that week's assigned experiments.

Other Course Information

This course is a course in the Electronics Technology and Telecommunications Technology programs.