

NET 126 ROUTING AND SWITCHING II

Prerequisite: NET 125

Corequisite: None

This course introduces router configurations, router protocols, switching methods, and hub terminology. Topics include the basic flow control methods, router startup commands, manipulation of router configuration files, IP, and data link addressing. Upon completion, students should be able to prepare the initial router configuration files as well as enable, verify, and configure IP addresses. Course Hours Per Week: Class, 1. Lab, 4. Semester Hours Credit, 3.

COURSE OBJECTIVES:

The student will be able to

- a. Work independently with a minimum of supervision or assistance
- b. Listen attentively
- c. Ask questions when appropriate
- d. Ask pertinent questions to gain appropriate information
- e. Interact with groups of users to determine their needs
- f. Explain and understand network transmission types
- g. Describe the OSI Model, including its constituent layers
- h. Describe switching types
- i. Compare and contrast Layer 2 and Layer 3 switching
- j. Given a scenario, identify valid network configurations
- k. Implement a switched network
- l. Configure SNMP and perform advanced management
- m. Understand packet switching and Frame Relay
- n. Describe ATM and advanced switching technologies
- o. Plan and troubleshoot distributed networks
- p. Evaluate network management responsibilities
- q. Configure routers, switches, and IP addressing in a heterogeneous environment

OUTLINE OF INSTRUCTION:

- I. Networking review – OSI Model, topologies, protocols, and addressing
 - A. Summary of duties of each of the 7 layers
 - B. Ethernet, Token Ring, FDDI
 - C. Star, bus, ring, mesh
 - D. Signaling
 - E. Logical vs physical addressing
 - F. IP, ARP, RIP, OSPF, SNMP

- II. Switching technology
 - A. RISC vs ASIC
 - B. Types of switch fabric (crossbar, shared memory, bus)
 - C. Store and forward vs cut through

- III. Layer 2 devices
 - A. Bridging Loops, Spanning Tree
 - B. Segment tables
 - C. Switch types (port based, MAC based, L3 address based)

- IV. Layer 3 devices
 - A. Addressing and classes
 - B. Subnetting and supernetting
 - C. ARP, ARP Cache, and Proxy ARP
 - D. Routing and switching
 - E. Distance vector routing – RIP, Count to Infinity, Split Horizon, Poison Reverse
 - F. Link state routing – OSFP, areas, border routers, Dijkstra's algorithm

- V. WAN switching
 - A. Packet switching and Frame Relay
 - B. Utilization and information rates
 - C. ATM – cells, virtual circuits, and LAN emulation

- VI. Network management
 - A. Planning for the future
 - B. Troubleshooting and maintenance
 - C. Management responsibilities
 - D. Management careers

REQUIRED TEXTBOOK AND MATERIALS:

To be Announced

STATEMENT OF STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability should request assistance from the Disability Services Coordinator within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to the Disability Services Coordinator within the first two weeks of class. The Coordinator can be contacted by calling 686-3652, (V/TT), or by visiting the Student Services Office, Room 23, of the White Building.