NET 226: Routing and Switching II

COURSE DESCRIPTION:
Prerequisites: NET 126
Corequisites: None

This course introduces WAN theory and design, WAN technology, PPP, Frame Relay, ISDN, and additional case studies. Topics include network congestion problems, TCP/IP transport and network layer protocols, advanced routing and switching configuration, ISDN protocols, PPP encapsulation operations on a router. Upon completion, students should be able to provide solutions for network routing problems, identify ISDN protocols, and describe the Spanning Tree protocol.

Course Hours per Week: Class, 1. Lab, 4. Semester Hours Credit, 3.

LEARNING OUTCOMES:

Upon completing requirements for this course, the student will be able to:

A. Provide solutions for network routing problems.
   1. Identify and correct common network problems at layers 1, 2, 3, and 7
   2. Interpret network diagrams
   3. Explain the basic operation of Network Address Translation (NAT)
   4. Configure NAT for given network requirements
   5. Troubleshoot NAT issues
   6. Troubleshoot WAN implementation issues

B. Select WAN protocols to meet network requirements.
   1. Describe different methods for connecting to a WAN
   2. Configure and verify a basic WAN serial connection
   3. Configure and verify a Point-to-Point Protocol (PPP) connection between routers
   4. Configure and verify Frame Relay connections

C. Implement appropriate network devices based on WAN requirements.
   1. Describe the components required for network and Internet communications
   2. Describe the importance, benefits, role, impact, and components of VPN technology.
   3. Describe current network security threats and explain how to implement a comprehensive security policy to mitigate common threats to network devices, hosts, and applications
   4. Describe the functions of common security appliances and applications
   5. Describe recommended security practices to secure network devices
   6. Describe the purpose and types of access control lists (ACLs)
   7. Configure and apply ACLs based on network filtering requirements
   8. Verify, monitor, and troubleshoot ACLs in a network environment

OUTLINE OF INSTRUCTION:
I. WAN Concepts
II. Point-to-Point Connections
III. Branch Connections
IV. Access Control Lists
V. Network Security and Monitoring
VI. Quality of Service
VII. Network Evolution
VIII. Network Troubleshooting