

# NET 225: Routing and Switching I

## COURSE DESCRIPTION:

Prerequisites: NET 126

Corequisites: None

This course focuses on advanced IP addressing techniques, intermediate routing protocols, command-line interface configuration of switches, Ethernet switching, VLANs, STP, and VTP. Emphasis will be on application and demonstration of skills acquired in pre-requisite courses. Upon completion, students should be able to perform tasks related to VLSM, routing protocols, switching concepts and configuration, STP, VLANs, and VTP. 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. Describe operations of routers and switches in larger networks.
  - 1. Explain basic switching concepts and switch operation
  - 2. Describe switching technologies of VLANs, 802.1q, and Spanning Tree
  - 3. Describe the logical operations of VLANs in separating networks and how routing occurs between them
- B. Configure routers and switches for advanced functionality.
  - 1. Install, configure, verify, and troubleshoot switches and routers with VLANs, trunks, and Spanning Tree
- C. Troubleshoot routers and switches.
  - 1. Interpret network diagrams
  - 2. Identify and correct common network problems at layers 1, 2, 3, and 7 using a layered model approach
  - 3. Verify network status and problems using ping, traceroute, arp, and other utilities

## OUTLINE OF INSTRUCTION:

- I. LAN Design
- II. Scaling VLANs
- III. STP
- IV. Etherchannel and HSRP
- V. Dynamic Routing
- VI. EIGRP
- VII. EIGRP Tuning and Troubleshooting
- VIII. Single-Area OSPF
- IX. Multiarea OSPF
- X. OSPF Tuning and Troubleshooting