NET 110
NETWORKING CONCEPTS

COURSE DESCRIPTION:

Prerequisites: None
Corequisites: None

This course introduces students to the networking field. Topics include network terminology and protocols, local-area networks, wide-area networks, OSI model, cabling, router programming, Ethernet, IP addressing, and network standards. Upon completion, students should be able to perform tasks related to networking mathematics, terminology, and models, media, Ethernet, subnetting, and TCP/IP Protocols. Course Hours Per Week: Class, 2. Lab, 2. Semester Hours Credit, 3.

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

a. Configure for networking a personal computer system, including the operating system, interface cards, and peripheral devices
b. Plan and install a home or small business network and connect it to the Internet
c. Verify and troubleshoot network and Internet connectivity
d. Share resources such as files and printers among multiple computers
e. Recognize and mitigate security threats to a home network
f. Configure and verify common Internet applications
g. Configure basic IP services on network connectivity devices
OUTLINE OF INSTRUCTION:

I. Networking in the Enterprise
   a. Describing the Enterprise Network
   b. Identifying Enterprise Applications
   c. Supporting Remote Workers

II. Exploring the Enterprise Network Infrastructure
   a. Describing the Current Network
   b. Supporting the Enterprise Edge
   c. Reviewing Routing and Switching

III. Switching in an Enterprise Network
   a. Describing Enterprise Level Switching
   b. Preventing Switching Loops
   c. Configuring VLANs
   d. Trunking and Inter-VLAN Routing
   e. Maintaining VLANs on an Enterprise Network

IV. Addressing in an Enterprise Network
   a. Using a Hierarchical IP Network Address Scheme
   b. Using VLSM
   c. Using Classless Routing and CIDR
   d. Using NAT and PAT

V. Routing with a Distance Vector Protocol
   a. Managing Enterprise Networks
   b. Routing Using the RIP Protocol
   c. Routing Using the EIGRP Protocol
   d. Implementing EIGRP

VI. Routing with a Link-State Protocol
   a. Routing Using the OSPF Protocol
   b. Implementing Single-Area OSPF
   c. Using Multiple Routing Protocols

VII. Implementing Enterprise WAN Links
   a. Connecting the Enterprise WAN
   b. Comparing Common WAN Encapsulations
   c. Using Frame Relay
VIII. Filtering Traffic Using Access Control Lists
   a. Using Access Control Lists
   b. Using a Wildcard Mask
   c. Configuring Access Control Lists
   d. Permitting and Denying Specific Types of Traffic
   e. Filtering Traffic Using Access Control Lists

IX. Troubleshooting an Enterprise Network
   a. Understanding the Impact of Network Failure
   b. Troubleshooting Switching and Connectivity Issues
   c. Troubleshooting Routing Issues
   d. Troubleshooting WAN Configurations
   e. Troubleshooting ACL Issues

REQUIRED TEXTBOOK AND MATERIALS:

Text to be assigned by the instructor each semester