Wayne County Community College District

COURSE SYLLABUS

CIS 276   Cyber Network Associate

CREDIT HOURS: 3.00   **CONTACT HOURS:** 45.00

COURSE DESCRIPTION:

This course provides the "how to" of installing, configuring, operating, and troubleshooting medium-size routed and switched networks. Using virtual environments, students will learn and demonstrate how to connect to a WAN, implement infrastructure-level network security (routers and switches), implement IP addressing schema, configure iOS devices, extend switched networks with VLANs, and manage IP traffic with access lists. Students will also develop a better understanding of how to make connections to remote sites via a WAN and mitigate network infrastructure level security threats.

Through lectures, discussions, demonstrations, textbook exercises, and classroom labs, students will also develop the skills and knowledge necessary to help prepare them for the Cisco Certified Network Administrator (CCNA) certification exam.

PREREQUISITES/ COREQUISITES: *CIS 272*

EXPECTED COMPETENCIES: *Upon completion of this course, the student will*:

Operation of IP Data Networks
- Recognize the purpose and functions of various network devices such as Routers, Switches, Bridges and Hubs
- Select the components required to meet a given network specification
- Identify common applications and their impact on the network
- Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models
- Predict the data flow between two hosts across a network
- Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN

LAN Switching Technologies
- Determine the technology and media access control method for Ethernet networks
- Identify basic switching concepts and the operation of Cisco switches.
- Configure and verify initial switch configuration including remote access management.
- Determine Cisco IOS commands to perform basic switch setup
- Verify network status and switch operation using basic utilities such as ping, telnet and SSH.
- Identify enhanced switching technologies
- Describe how VLANs create logically separate networks and the need for routing between them
- Explain network segmentation and basic traffic management concepts
- Configure and verify VLANs
- Configure and verify trucking on Cisco switches

IP addressing (1Pv4 / 1Pv6)
- Describe the operation and necessity of using private and public IP addresses for 1Pv4 addressing
- Identify the appropriate 1Pv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment
- Identify the appropriate 1Pv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment
- Describe the technological requirements for running 1Pv6 in conjunction with 1Pv4 such as dual stack
- Describe IPv6 addresses

IP Routing Technologies
- Describe basic routing concepts
- Describe the boot process of Cisco IOS routers
- Configure and verify utilizing the CLI to set basic Router configuration
- Configure and verify operation status of a device interface, both serial and Ethernet
- Verify router configuration and network connectivity
- Manage Cisco IOS Files
- Configure Boot preferences
- Configure and verify interVLAN routing (Router on a stick)
- Configure SVI interfaces

Network Device Security
- Configure and verify network device security features such as
- Describe external authentication methods
- Configure and verify Switch Port Security features such as assign unused ports to an unused VLAN
- Describe setting native VLAN to other than VLAN 1
- Configure and verify ACLs to filter network traffic
- Configure and verify ACLs to limit telnet and SSH access to the router

Troubleshooting
- Identify and correct common network problems
- Troubleshoot and correct common problems associated with IP addressing and host configurations
- Troubleshoot and Resolve Spanning Tree operation issues
- Troubleshoot and Resolve routing issues
- Troubleshoot and Resolve OSPF problems

WAN Technologies
- Identify different WAN Technologies
- Configure and verify a basic WAN serial connection
- Configure and verify a PPP connection between Cisco routers
- Configure and verify Frame Relay on Cisco routers
- Implement and troubleshoot PPPoE

ASSESSMENT METHODS:
Student performance may be assessed by examination, quizzes, case studies, oral conversation, group discussion, oral presentations. The instructor reserves the option to employ one or more of these assessment methods during the course.

GRADING SCALE:
90%-100% = A
80%-89.9%= B
70%-79.9%= C
60%-69.9%= D
<60% = E