

MERCER COUNTY COMMUNITY COLLEGE

Division of Business and Technology

NET 230

Advanced Switched Networks

COURSE DESCRIPTION:

Presents the concepts, commands, and practice required to understand how routing and switching technologies work together, including recommended campus network design methodologies. Topics include an in-depth analysis of Layer 2 switching technologies, including Spanning Tree, VLAN technologies, frame tagging, and protocols, as well as Layer 3 routing services, including inter-VLAN routing, multilayer switching, Hot Standby Routing Protocol (HSRP), and IP multicast. Hands-on exercises reinforce certification exam objectives.

Text (s): **Reference Division Booklist**

Prerequisites: **NET130 or CCNA Certification**

Co-requisites:

Credits: **3**

Lecture Hours: **2**

Studio/Lab Hours: **2**

Food and Drink are strictly prohibited in classrooms as per Health and Safety Laws. Students may not bring in chemicals of any kind without the appropriate MSD sheets.

Course Coordinator: **Jeff Weichert**

Latest Review: Fall 2002

I. COURSE OBJECTIVES

At the completion of this course, with appropriate study, you will be able to do the following:

- Learn how to build and manage switched campus networks offering a combination of Layer 2 and Layer 3 services.
- Improve IP performance by identifying multilayer switching devices, configuring multilayer switching services, verifying multilayer switch flows, and applying flow masks.
- Manage redundant links through proper application of transparent bridging and Spanning-Tree Protocol.
- Given a campus design that includes multilayer switching over Fast Ethernet, deploy the required products and services that enable connectivity and traffic transport.
- Implement the necessary services at each layer of the network to all users to obtain membership in multicast groups in a working multilayer switched network.
- Given a working multilayer switched network, control network traffic by implementing the necessary admission policy at each layer of the network topology.
- When presented with an incorrectly working multilayer switched network, restore proper network operations through the use of network devices and external management tools.

II. PREREQUISITES

The ability to carry out the following configuration tasks:

- Basic router configuration.
- Basic switch configuration
- Basic VLAN configuration
- Spanning Tree Protocol configuration
- Inter-Switch Link configuration
- Standard access list configuration

III. EVALUATION

Final grades are determined through a weighted average of midterm and final examinations, quizzes, laboratory assignments, homework assignments, class participation, and attendance. Your final grade in the course will be based on the following:

Class attendance and participation	10%
Homework assignments	15%
Laboratory assignments	15%
Quizzes	20%
Midterm examination	20%
Final examination	<u>20%</u>
	100%

IV. TOPIC OUTLINE

- Bridging and switching, including trunking, broadcasts, multicasts, VTP, routing, PIM, Multi-Layer switching, Fast Ethernet, IP Multicast, quality of service, security, TAG Switching, and static VLANs.
- OSI Reference Model and Layered Communication, including troubleshooting, switch components, RMON, policy management.
- Network Fundamentals, including DDR.
- Standards Definitions, including IEEE Standards,
- Fundamentals, including Debug, IOS CLI Switch, Cisco TAC/CCO, and troubleshooting.
- Network protocols, including ATM, LANE, troubleshooting, switching modes/methods, port configuration.
- Routing, including trunking.