

MERCER COUNTY COMMUNITY COLLEGE

Division of Business and Technology

NET 130

Interconnecting Network Devices

COURSE DESCRIPTION:

The course presents the concepts, commands, and practice required to configure switches and routers in multiprotocol internetworks. Through lectures, discussions, demonstrations, exercises, and laboratory projects, students are given information sufficient to identify and recommend the best solutions for small to medium-size businesses. Students perform all basic configuration procedures to build a multirouter, multigroup internetwork that uses LAN and WAN interfaces for the most commonly used routing and routed protocols. In addition, the installation, configuration and troubleshooting information that technical support individuals require to install and configure these interconnecting devices is presented. Hands-on exercises reinforce certification exam objectives.

Text(s): Reference Division Booklist

Prerequisites: NET101 and NET106 (295) or A+ Certification, NET104 (283)
or Network + Certification

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: Spring 2004

I. OVERVIEW OF THE COURSE

Students will learn to select the appropriate Network Routing and switching devices, assemble and cable these devices, and manage the network environment. Operating and configuring an IOS Device, a catalyst switch, and router is covered. In addition, students learn to add and configure basic IP and IPX routing protocols and manage IP traffic with access lists. Establishing serial point-to-point connections, various configuration tools and troubleshooting is also covered.

The course is intended for those who administer computer networks or who are on the CISCO associate level certification track.

This three-credit course uses a combination of lectures, demonstrations, discussions, online assignments, and hands-on labs.

II. PREREQUISITES:

The following skills are required to complete the course successfully:

- Knowledge of basic computer hardware components, including memory, hard disks, CPUs, communication and printer ports, display adapters, and pointing devices.
- Working knowledge of an operating system, such as Microsoft MS-DOS, UNIX, Microsoft Windows version 3x, Microsoft Windows for Workgroups, Microsoft Windows 95, or Microsoft Windows NT.
- Proficiency using the Windows 95 or Windows NT interface, including the ability to use Windows Explorer to locate, create, and manipulate folders and files, to create shortcuts, and to configure the desktop environment.
- Working knowledge of major networking components, including clients, servers, local area networks (LANs), network adapter cards, drivers, protocols, and network operating systems.

III. OUTLINE

- Overview of Internetworking concepts, including mapping to a hierarchical model, overview of OSI model, communicating between OSI layers, and selecting products.
- Assembling and cabling devices, including LAN, WAN, and setting up console connections to devices.
- Configuring and operating an IOS device, including basic operations, starting a switch, command line interfaces, basic switch information, starting a router, configuring a router.
- Managing the network environment, including information collection, remote devices, documentation, router booting sequence and verification commands, and managing IOS images.
- Catalyst Switch operations, including basic layer 2 switching technologies, general catalyst switch technology, and configuration.
- Extending switched networks with virtual LANs, including VLAN concepts, Inter-Switch Links, trunking protocol, and configuration.

IV. COURSE OBJECTIVES

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

1. Determine in which situations a hub, Ethernet switch, or router would be more appropriately used.
2. Use software to identify addresses, protocols, and connectivity status in a network containing multiple interconnected devices.
3. Interconnect switches and routers according to a given network design specification.
4. Configure switches and routers to support a specified list of protocols and technologies.
5. Configure access lists to control access to network devices or segments and general network traffic.
6. Verify that switches and routers, as well as their configured network services and protocols, operate as intended within a given network specification.

V. EVALUATION

Final grades are determined by 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%

Classroom Conduct Statement

It is the student's responsibility to attend all classes. If a student misses a class meeting for any reason, he/she is responsible for all content that is covered, for announcements made, and for acquiring any materials that may have been distributed in class. It is expected that students be on time for all classes. Students who walk into class after it has begun are expected to choose seats close to where they entered the room so that they do not disrupt the class meeting.

Students are expected to follow ordinary rules of courtesy during the class sessions. Engaging in private, side conversations during class time is distracting to other students and to the instructor. Leaving class early without having informed the instructor prior to class is not appropriate. Unless there is an emergency, leaving class and returning while the class is in session is not acceptable behavior. Disruptive behavior of any type, including sharpening pencils during class while someone is speaking, is not appropriate.

The college welcomes all students into an environment that creates a sense of community of pride and respect; we are here to work cooperatively and to learn together.

Academic Integrity Statement

A student who knowingly represents work of others as his/her own, uses or obtains unauthorized assistance in the execution of any academic work, or gives fraudulent assistance to another student is guilty of cheating. The penalty for violating the honor code is severe. (*See Student Handbook.*) Any student violating the honor code is subject to receive a failing grade for the course and will be reported to the Office of Student Affairs. If a student is unclear about whether a particular situation may constitute an honor code violation, the student should meet with the instructor to discuss the situation.

It is permissible to assist classmates in general discussions of computing techniques; general advice and interaction are encouraged. Each person, however, must develop his or her own solutions to the assigned homework and laboratory exercises. Students may not "work together" on graded assignments. Such collaboration constitutes cheating, unless it is a group assignment. A student may not use or copy (by any means) another's work (or portions of it) and represent it as his/her own.