MERCER COUNTY COMMUNITY COLLEGE

Division of Business and Technology

NET 104

NETWORKING ESSENTIALS

COURSE DESCRIPTION:

This course provides students with a fundamental background in data communications theory, network management and connectivity, the OSI model, and internetworking protocols and standards. Topics include: network protocols, topologies, architectures, operating systems, security, LAN and WAN components, modem implementation, network operating system functions, LAN support resources, LAN troubleshooting, fault tolerance, network adapters, and client/server environments.

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

Prerequisites: Basic Computer Literacy

Co-requisites:

Credits: **3**   Lecture Hours: **2**   Studio/Lab Hours: **2**

Course Coordinator: Jeff Weichert   **Latest Review: Spring 2004**

I.   OVERVIEW OF THE COURSE

This course serves as a general introduction for students to acquire a foundation in current network technologies for local area networks (LANs), wide area networks (WANs), and the Internet. The course provides an introduction to the hardware, software, terminology, components, design, and connections of a network, as well as the topologies and protocols for LANs. It covers LAN-user concepts and the basic functions of system administration and operation

The course is intended for those who will support or administer networks, or who are on the Microsoft Certified Systems Engineer Windows NT track.

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

II.   PREREQUISITES

The following skills will be required to complete the course successfully:

- Working knowledge of software and hardware in stand-alone personal computers.
- Working knowledge of the operation and support of stand-alone personal computers, which includes but is not limited to:
  - Installing application software.
  - Customizing certain files including batch files, AUTOEXEC.BAT, and CONFIG.SYS.

III.   COURSE OBJECTIVES

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

1. Identify the components of a LAN and determine the type of network design most appropriate for a given site.
2. Identify the different media used in network communications, distinguish between them, and determine how to use them to connect servers and workstations in a network.
3. Distinguish between the different networking standards, protocols, and access methods, and determine which would be most appropriate for a given LAN.
4. Recognize the primary network architectures, identify their major characteristics, and determine which would be the most appropriate for a proposed LAN.
5. Identify the primary functions of network operating systems and distinguish between a centralized computing environment and a client/server environment.

COURSE OBJECTIVES (cont'd)

6. Determine how to implement and support the major networking components (including the server, operating system, and clients), and propose a system for adequately securing data on a given LAN and protecting the system's components.

7. Distinguish between LANs and WANs, identify the components used to expand a LAN into a WAN, and determine how to implement an appropriate modem in the larger LAN/WAN environment.

8. Identify strategic LAN support tools and resources, and determine how to use these in troubleshooting basic network problems.

9. Identify the components of the Internet.

IV. 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	20%
	100%

V.   TOPIC OUTLINE

Unit 1

- Networking Concepts

Unit 2

- Major Type of Networks
- Network Design

Unit 3

- Network Media

Unit 4

- Network Adapter Cards

Unit 5

- OSI and 802 Network Models
- Device Drivers

Unit 6

- Network Communications
- Network Protocols

Unit 7

- Access Methods

Unit 8

- Network Architectures

Unit 9

- Network Operating Systems
- Network Printing

Unit 10

- Network Applications
- Multi-vendor Environments
- Client/Server Environment

Unit 11

- User and Group Accounts
- Network Performance

Unit 12

- Network Security
- Data Protection

Unit 13

- Connectivity Devices
- WANs

Unit 14

- Problem Prevention
- Network Troubleshooting
- The Internet

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 <u>all</u> content that is covered, for <u>announcements</u> 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. (S*ee 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 <u>own</u> 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.