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, LAN and WAN components, 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

Food and Drink are strictly prohibited in Classrooms as per Health and Safety Laws. Students may not bring in chemicals or cleaning fluids without the appropriate MSD sheets.

Course Coordinator: Jeff Weichert  Latest Review: August 2011
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 emphasis of the course is on hardware and protocols. Special attention is paid to MAC addressing and ports, and IP sub-netting.

The course is intended for those who will support or administer networks, or who are on the Cisco Certified Network Associate (CCNA) 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. Identify strategic LAN support tools and resources, and determine how to use these in troubleshooting basic network problems.

8. 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, participation, and lab work: 10%
- Homework assignments: 10%
- Quizzes/Tests: 20%
- Project: 10%
- Midterm examination: 25%
- Final examination: 25%

Total: 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**
- Intro 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 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.