NET 104

FUNDAMENTALS OF COMPUTER NETWORKS

COURSE DESCRIPTION:

This course provides students with a fundamental background in data communications theory, network management and connectivity, the OSI and TCP/IP models, 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: SPRING 2019
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.

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.
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. 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
V. 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%

Grades will be assigned in accordance with the following:

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<th>Letter grade</th>
<th>Nominal %</th>
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Attendance Policy:
It is expected that students attend and be on time for all class meetings; attendance is taken at the beginning of every class. 3 lates count as an absence. To accommodate students’ reasonable, personal situations that might prevent them from attending classes, each student is entitled to excused absences amounting to the equivalent of one week’s class time in a semester. At the instructor's discretion, students’ reasonable, personal situations may permit limited excused absences if proper documentation is provided. Students with repeated unexcused absences may be subjected to a drop in letter grade or result in withdrawal from the course. Students are responsible for acquiring content that is covered, announcements made, and materials that may have been distributed.

Assignment Policy:
All assignments are expected to be handed in on the due date at the beginning of class. 10% will be deducted each week for assignments turned in late. All late assignments must be turned in two weeks prior before the final exam.

Academic Integrity Statement
Academic integrity is important to student success. Students who submit the work of another student will be penalized. According to the student handbook, “A student who, a)
knowingly represents work of others as his/her own; b) uses or obtains unauthorized assistance in the execution of any academic work; or c) gives fraudulent assistance to another student is guilty of cheating. Violators will be penalized.”

**Classroom Conduct Statement**

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

Students must follow ordinary rules of **courtesy** during class sessions. Engaging in private conversations, texting, answering a cell phone, sleeping, or other disruptive behavior during class time will not be tolerated.

**First Semester Students** A coach has been assigned to assist you with navigating your first semester in college. They help with understanding how Mercer works, finding appropriate help with coursework, and establishing academic goals. [www.mccc.edu/coaching](http://www.mccc.edu/coaching) to find your coach or Contact: Arlene Stinson, LB217, 570-3451, [SOAR@mccc.edu](mailto:SOAR@mccc.edu)

**Academic Advising after your first semester** Faculty advisors provide help with completing your major after your first semester. Meet your faculty advisors! Contact the division of your major to find out who is your faculty advisor.

<table>
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<tr>
<th>Liberal Arts Division Debbie Stotland</th>
<th>LA162, 570-3378, <a href="mailto:Stotland@mccc.edu">Stotland@mccc.edu</a></th>
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<td>3530, <a href="mailto:glassm@mccc.edu">glassm@mccc.edu</a></td>
<td>Michael Glass</td>
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<td>SC201, 570-3530</td>
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**Use your “MyMercer” Portal!** Your “MyMercer” portal contains your MercerMail, financial information, class schedule, grades, and other information. Check your “MyMercer” portal every day! Visit [www.mccc.edu/mymercer](http://www.mccc.edu/mymercer) to access your portal.

**Tutoring support** Academic support services are free and available for all students. Drop in or contact the following to make arrangements:

Arlene Stinson (WWC), LB 217, 570.3422, stinsona@mccc.edu  Joann Mia (TC), KC311, 570-3128, miaj@mccc.edu

**Reasonable Accommodations for Students with Documented Disabilities** Mercer County Community College is committed to ensuring the full participation of all students in all activities, programs and services. If you have a documented differing ability or think that you may have a differing ability that is protected under the ADA and Section 504 of the Rehabilitation Act, please contact Arlene Stinson in LB 216 stinsona@mccc.edu for information regarding support services. If you do not have a documented differing ability, remember that other resources are available to all students on campus including academic support through our Academic Learning Center located in LB 214.

**Career and Transfer Center** Planning to go to work or to transfer to a 4-year college after completing your Mercer degree? Contact the Career and Transfer Center for support.
Laurene Jones (WWC transfer services), SC201, 570-3307, jonesl@mccc.edu  Michael Glass (WWC career services), SC201 570-3530, glassm@mccc.edu  Kimberley Bowser (TC transfer and career), KC216, 570-3110, bowserk@mccc.edu

**Counseling Services** Are you experiencing personal challenges, feeling overwhelmed? Are you having stress and anxiety? Counseling services are available free of charge. Contact: Dorothy Gasparro (Counseling srvs), SC239, 570-3354, gasparrd@mccc.edu

**Veteran’s Services** If you are military, veteran, or family member, we offer free support for you. Contact: John Becker, SC220, 570-3240, vets@mccc.edu

**Financial Aid** It is recommended that students complete an application for financial aid to determine eligibility for financial assistance. The application is **FREE** and available at [www.fafsa.ed.gov](http://www.fafsa.ed.gov)