

MERCER COUNTY COMMUNITY COLLEGE

Division of Business and STEM

NET 230

Scaling 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**

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 2019**

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
- Inter-Switch Link configuration
- Standard access list configuration

III. 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.
- Standards Definitions, including IEEE Standards,
- Debug, advanced IOS, troubleshooting.
- Advanced Routing Protocols

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	<u>25%</u>
	100%

Grades will be assigned in accordance with the following:

Letter grade	Nominal %	QPA quality points
A	90-100	4.0
B	80-89	3.0
C	70-79	2.0
D	60-69	1.0
F	0-59	0.0

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 to find your coach or Contact: Arlene Stinson, LB217, 570-3451, 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.

Liberal Arts Division	Debbie Stotland	LA162, 570-3378,	
		Stotland@mccc.edu	Bus STEM Division
		BS134, 570-3482,	Doris Geck
		Geckd@mccc.edu	Health Sciences
		Barbara Pieslak	MS126, 570-3383,
		pieslakb@mccc.edu	
Undecided major	Michael Glass	SC201, 570-3530,	glassm@mccc.edu

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 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