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 multi-router, 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: NET104

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. **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 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.
- Proficiency using the Windows desktop 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 and TCPIP models, communicating between 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 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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class attendance, participation, and lab work</td>
<td>10%</td>
</tr>
<tr>
<td>Homework assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes/Tests</td>
<td>20%</td>
</tr>
<tr>
<td>Project</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm examination</td>
<td>25%</td>
</tr>
<tr>
<td>Final examination</td>
<td>25%</td>
</tr>
</tbody>
</table>

Grades will be assigned in accordance with the following:

<table>
<thead>
<tr>
<th>Letter grade</th>
<th>Nominal %</th>
<th>QPA quality points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
<td>4.0</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
<td>3.0</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
<td>2.0</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>0-59</td>
<td>0.0</td>
</tr>
</tbody>
</table>
**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.
Liberal Arts Division Debbie Stotland LA162, 570-3378, [Stotland@mccc.edu](mailto:Stotland@mccc.edu) Bus STEM Division Doris Geck BS134, 570-3482, [Geckd@mccc.edu](mailto:Geckd@mccc.edu) Health Sciences Barbara Pieslak MS126, 570-3383, [pieslakb@mccc.edu](mailto:pieslakb@mccc.edu)
Undecided major Michael Glass SC201, 570-3530, [glassm@mccc.edu](mailto: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
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.