

Pellissippi State Community College
Master Syllabus

Routing/Switch Configuration
CSIT 2750

Class Hours: 3.0
Laboratory Hours: 3.0
Credit Hours: 4.0
Revised: Fall 2009

Instructor:
Office:
Phone:
E-mail:

Catalog Course Description:

This course provides instruction in the design and implementation of LAN and WAN networks using Cisco routers and switches. Topics include IP addressing, subnetting, and Variable Length Subnet Masks (VLSM); Internetworking Operating System (IOS) and Security Device Manager (SDM); network management; IP routing; switching and Spanning Tree Protocol (STP); Virtual LANs (VLAN); and Wide Area Networks (WAN).

Entry-Level Standards:

College level reading and math skills; keyboarding skills of at least 20 wpm; familiarity with the architecture and operation of standard PCs

Prerequisite(s):

CSIT 1730 (NETW 1100) or consent of instructor

Textbooks, and Other Supplies:

Todd Lammle; CCENT: Cisco Certified Entry Networking Technician Study Guide, SYBEX Inc., ISBN 978-0-470-24702-0.

I. WEEK/UNIT/TOPIC BASIS:

| Week | Unit | Topic |
|-------------|-------------|---|
| 1 | 1, 2 | Review of Networking Fundamentals |
| 2 | 3 | IP Subnetting |
| 3 | 3 | Variable Length Subnet Masks (VLSMs) and Troubleshooting TCP/IP |
| 4 | 4 | Cisco IOS and SDM |
| 5 | 4 | Cisco IOS and SDM |
| 6 | 5 | Managing a Cisco Internetwork |
| 7 | - | Review and Test 1 |
| 8 | 6 | IP Routing |
| 9 | 6 | IP Routing |
| 10 | 7 | Layer 2 Switching and Spanning Tree Protocol (STP) |
| 11 | 7 | Configuring Cisco Switches |
| 12 | - | Virtual LANs (VLANs) |
| 13 | - | Review and Test 2 |
| 14 | 10 | Wide Area Networks |
| 15 | | Final Exam |

II. COURSE OBJECTIVES:

- A. Develop a working understanding of the terminology, hardware devices, system software, and a proficiency in current LAN and WAN internetworking. I, II, IV
- B. Exhibit knowledge of router and switch implementation and configuration. II, III, IV
- C. Demonstrate use of logical addressing schemas and WAN protocols. I, II, III, V
- D. Write well-documented methods of maintaining LAN and WAN networks. I, II, V, X
- E. Use troubleshooting skills to solve complex internetworking problems. I, II, IV, V

*Roman numerals after course objectives reference goals of the CSIT program.

III. INSTRUCTIONAL PROCESSES:*

Students will:

- 1. Design a complex networking plan which incorporates advanced routing techniques. (Communication Outcome, Technological Literacy Outcome, Transitional Strategies, Active Learning Strategies)
- 2. Examine and implement solutions to challenging internetworking problems. (Technological Literacy Outcome)
- 3. Use professional diagnostic tools to produce successfully implemented LAN and WAN networking products. (Technological Literacy Outcome, Transitional Strategies)
- 4. Participate in team projects involving installation, configuration, and upgrading of LAN and WAN software and hardware. (Mathematics Outcome, Transitional Strategies, Active Learning Strategies)
- 5. Prepare documents explaining the route for troubleshooting WAN configurations. (Communication Outcome, Technological Literacy Outcome, Transitional Strategies)
- 6. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. (Active Learning Strategies, Transitional Strategies)

*Strategies and outcomes listed after instructional processes reference Pellissippi State's goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. EXPECTATIONS FOR STUDENT PERFORMANCE:

Upon successful completion of this course, the student should be able to:

- 1. Understand OSI model, internetworking devices, IP addressing, LAN media and topologies, and structured cabling. A, B
- 2. Understand IP subnetting and Variable Length Subnet Mask (VLSM) techniques. C
- 3. Learn to document internetworking activities and use them to troubleshoot the network. D, E
- 4. Develop people and team skills by working in teams. E
- 5. Understand routing theory, router components, router startup, router setup, and router configuration techniques. B
- 6. Understand layer 2 switching concepts and protocols to configure and manage Cisco switches. A, B
- 7. Understand theory and configuration techniques to maintain VLANs. B, C
- 8. Develop understanding of IP routing protocols and skills to manage and troubleshoot

- internetworks. C, E
9. Develop ability to design, install, and maintain Internetworks. D, E
 10. Utilize advanced router configuration and accessibility tools in an internetwork. B
 11. Understand associated hardware, software tools, and networking techniques. A
 12. Document best practices in maintaining existing infrastructure. E

*Letters after performance expectations reference the course objectives listed above.

V. **EVALUATION:**

A. Testing Procedures

Two tests will be given during the course of the semester. Final exam will be comprehensive and there will be no make-up tests unless prior arrangements are made with the instructor.

B. Laboratory Expectations

6-8 individual and team lab assignments will be given during the semester. Assignments must be completed and submitted by the assigned deadline. This is a coordinated laboratory class, and assignments must be completed as scheduled. A late penalty will be imposed on any overdue assignment. Failure to make a passing average in lab assignments may result in a grade of F for the course.

C. Field Work:

N/A

D. Other Evaluation Methods:

You are expected to do your own work in this class. If you are unable to complete an assignment on your own, it is your responsibility to get help from the instructor (before the assignment is due). Plagiarism, cheating, software piracy, non-educational use of computer systems and other forms of academic dishonesty are strictly prohibited. A student caught cheating or infracting specific rules will be given a grade of "F" for the course and a letter from the department head will be placed in the student's academic record file, or dismissal from the college will be recommended.

In the event that you have an emergency beyond your control, you must notify the instructor in advance, if at all possible.

E. Grading Scale:

| | |
|----------|----|
| 93 – 100 | A |
| 88 – 92 | B+ |
| 83 – 87 | B |
| 78 – 82 | C+ |
| 73 – 77 | C |
| 65 – 72 | D |
| Below 65 | F |

VI. POLICIES:

A. Attendance Policy:

Pellissippi State Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course.

[NOTE: No differentiation is noted for excused/unexcused absences. These will be treated as an absence.] (Pellissippi State, 2008-2010 Catalog,

<http://pstcc15.pstcc.edu/catalog>, page 83)

B. Academic Dishonesty:

Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly through participation or assistance, are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions which may be imposed through the regular Pellissippi State procedures as a result of academic misconduct, the instructor has the authority to assign an F or a zero for the exercise or examination or to assign an F in the course. (Pellissippi State, 2008-2010 Catalog, <http://pstcc15.pstcc.edu/catalog>, pages 61-62)

C. Computer Usage Guidelines:

College-owned or –operated computing resources are provided for use by students of Pellissippi State. All students are responsible for the usage of Pellissippi State’s computing resources in an effective, efficient, ethical and lawful manner. (Pellissippi State, 2008-2010 Catalog, <http://pstcc15.pstcc.edu/catalog>, pages 66-69)

D. Students with Disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office.

Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course.

Services for Students with Disabilities may be contacted by going to Goins 134 or 126 or by phone: 694-6751(Voice/TTY) or 539-7153. More information is available at

www.pstcc.edu/departments/swd/