PELLISIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

ROUTING AND SWITCHING
NETW 2500

Class Hours: 3.0
Laboratory Hours: 3.0
Credit Hours: 4.0
Date Revised: Spring 01

Catalog Course Description:
Topics include address and encapsulation, access lists, Novell protocol and interfaces, LAN segmentation and internetworking devices, switching methods, Ethernet operation, Fast Ethernet, LAN switching, and virtual LANs.

Entry Level Standards:
The student MUST be familiar with the architecture and operation of standard PCs. Mastery of the first two Cisco semesters is required. The student must have math, writing, verbal, and English language skills at the college level. It is helpful to have: A++ certification; Microsoft Office skills; introductory programming or multimedia courses; introductory electronics

Prerequisite:
NETW 1520

Textbook(s) and Other Reference Materials Basic to the Course:
Online curriculum at Cisco web site: http://cisco.netacad.net. No text is required.

I. Week/Unit/Topic Basis:

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Review of Semesters 1&amp;2</td>
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<tr>
<td>2</td>
<td>LAN Switching</td>
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<td>3</td>
<td>LAN Switching</td>
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<td>4</td>
<td>LAN Switching; TCS</td>
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<tr>
<td>5</td>
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<td>6</td>
<td>VLALs; TCS</td>
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<tr>
<td>7</td>
<td>LAN Design; TCS</td>
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<tr>
<td>8</td>
<td>LAN Design; TCS</td>
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II. Course Objectives*:

A. Demonstrate proficiency in differentiating LAN technologies. I II IV V VI

B. Demonstrate knowledge of the process of routing. II III VIII IX X

C. Demonstrate knowledge of switch implementation and configuration. I II VI VIII

D. Demonstrate use of VLANs, STP, switch setup, and software configuration. I VIII IX X XI

E. Explain the theory and benefits of VLANs. I IV VII XII

F. Write well-documented methods of configuring VLANs on a switch. I II VI VIII

G. Use troubleshooting skills to solve complex switch and router problems. I II IV X

*Roman numerals after course objectives reference goals of the Business and Computer Technology department.

III. Instructional Processes*:

Students will:

1. Design a complex networking plan that incorporates advanced IP address planning. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy

2. Examine and implement solutions to challenging routing processes. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy

3. Use professional diagnostic tools to produce successfully implemented bridges, switches, and routers. Technological Literacy Outcome, Personal Development Outcome, Transitional Strategy, Active Learning Strategy

4. Participate in team projects involving installation, configuration, and upgrading of switch software and hardware. Communication Outcome, Problem Solving and Decision Making Outcome, Transitional Strategy, Active Learning Strategy

5. Prepare documents explaining the route for troubleshooting VLAN configurations.
Communication Outcome, Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome, Transitional Strategy, Active Learning Strategy

6. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. Personal Development Outcome

*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. Describe in detail the OSI layers. A, E, G
2. Utilize IP addressing planning in a complex network. B, C, G
3. Understand the basic operation of a switch. C, D
4. Understand simple hardware setup and software configuration of a switch. C, D, E
5. Explain the theory and benefits of VLANs. E, F
6. Explain Layer 1, Layer 2, and Layer 3 network design. A, B, C
7. Create physical topologies, site wiring diagrams, and logical topologies. D, F
8. Explain the operation and metrics of IGRP. B, G
9. Migrate a router from RIP to IGRP. B, G
10. Explain and configure standard access control lists on a router. A, B, G
11. Address configuration and monitor a network using IPX. A, G

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

V. Evaluation:

A. Testing Procedures:

Fourteen concept-based exams
Exams 40% On-Line Exams
Final Exam 30% Comprehensive Written, Oral, and Lab Practical Exams
There will be no make-up tests unless prior arrangements are made with the instructor.

B. Laboratory Expectations:

Skill Exams pass/fail
Mastery of Skills: PC hardware & software; making of cables; structured wiring installations; building and troubleshooting simple LANS. Individual router configuration; configuring networks of routers; building and troubleshooting simple LANS.
Lab attendance is required. Assignments must be completed and submitted by the assigned deadline. This is a coordinated laboratory class, and assignments must be completed as
scheduled.

C. Field Work:

N/A

D. Other Evaluation Methods:

  Homework 10%  practice problems and designs
  Journal 10%  document all laboratory and project work completely
  Portfolio 10%  Semester Online Portfolio; posting physical and logical topologies
  Pop-Quizzes and "Outside-Class" take-home assignments may be given.

E. Grading Scale:

  90 - 100%   A
  80 - 89%    B
  70 - 79%    C
  60- 69%     D
  0 - 59%     F

VI. Policies:

A. Attendance Policy:

Students are expected to promptly attend all lecture and lab classes as assigned. Pellissippi State Technical 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.

B. Academic Dishonesty:

Plagiarism, cheating, software piracy, non-educational use of computer systems and other forms of academic dishonesty are strictly prohibited.