PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

ADVANCED ROUTING CONFIGURATION
NETW 1520

Class Hours: 3.0 Credit Hours: 4.0
Laboratory Hours: 3.0 Date Revised: Fall 00

NOTE: This course is not intended for transfer credit.

Catalog Course Description:

Topics include router elements; network service; TCP/IP transport-layer protocols; managing configuration files; IOS software commands; protocol address resolution; router topology; IP addressing; and access list operations.

Entry Level Standards:

The student MUST be familiar with the architecture and operation of standard PCs. Mastery of the first two Cisco semesters is expected. The student must have math, writing, verbal, and English language skills at the college level.

Prerequisite:

NETW 1500

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:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>PC Hardware and Software: Networking, Layered Communications; OSI Model; Encapsulation: Layer 1</td>
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<tr>
<td>2</td>
<td>Layer 2: Internetworking Devices; IP addressing</td>
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<td>3</td>
<td>IP Addressing</td>
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<td>4</td>
<td>Lab Exam #1. ARP and RARP</td>
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<td>5</td>
<td>Media Design</td>
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<td>6</td>
<td>Topology; Lab Exam #2</td>
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<tr>
<td>7</td>
<td>Structured Cabling</td>
</tr>
<tr>
<td>8</td>
<td>Electronics</td>
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Network Management

OSI Model; Layers 1-7; WANs

Routing; Using the Router

Router Components

Router Startup and Setup

Router Configuration

IOS: TCP/IP; IP Addressing; Routing Protocols

Final Exam

II. Course Objectives*:

A. Demonstrate proficiency in current WAN internetworking. II. III, VII, IX, XI

B. Demonstrate knowledge of WAN networking skills and be able to use these skills in an enterprise setting. III, VI, VII, IX, XI

C. Demonstrate knowledge of router implementation and configuration. III, IV, XI, XII

D. Demonstrate use of logical addressing schemas, WAN protocols, and networking standards. I, III, IV, VI, VII, X

E. Demonstrate use of hardware and software diagnostic skills. I, II, III, VIII


G. Use troubleshooting skills to solve complex internetworking problems. I, II, IV, V

*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 which incorporates advanced routing techniques. Communication Outcome, Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome, Transitional Strategy, Active Learning Strategy

2. Examine and implement solutions to challenging internetworking. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome, Transitional Strategy

3. Use professional diagnostic tools to produce successfully implemented wide area networking products. Technological Literacy Outcome, Personal Development Outcome, Transitional Strategy

4. Participate in team projects involving installation, configuration, and upgrading of WAN software and hardware. Communication Outcome, Problem Solving and Decision Making Outcome, Personal Development Outcome, Transitional Strategy, Active Learning Strategy
5. Prepare documents explaining the route for troubleshooting WAN configurations. 

*Communication Outcome, Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome, Personal Development Outcome*

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. Understand networking router theory and implementation. C
2. Utilize advanced networking router configuration in the enterprise. A, G
3. Understand associated hardware, software tools, and networking techniques. C
4. Understand implementation of networking media management techniques. C
5. Understand project management coordination. B
6. Utilize working in networking team skills. B, E
7. Understand basic technology literacy. E
8. Demonstrate an awareness of IT careers. A

*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.