PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

ROUTING CONFIGURATION (WAN)
NETW 1510

Class Hours: 3.0
Laboratory Hours: 3.0
Credit Hours: 4.0
Date Revised: Spring 02

NOTE: This course is not intended for transfer credit.

Catalog Course Description:

Topics include functions of the OSI model, data link and network addresses, internetworking functions of the OSI model, data encapsulation conversion, IP addressing and subnetting, TCP/IP network layer protocols, router elements, network service, TCP/IP transport-layer protocols, managing configuration files, IOS software commands, protocol address resolution, router topology, and access list operations.

Entry Level Standards:

The student MUST be familiar with the architecture and operations of standard PCs. The student must have verbal and English language skills at the college level.

Prerequisites:

None

Textbook(s) and Other Reference Materials Basic to the Course:

Online Multimedia

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Networking and the OSI Reference Model</td>
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<tr>
<td>2</td>
<td>The Physical and Data Link Layers</td>
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<td>3</td>
<td>Networking Devices - LANs and WANs</td>
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<td>4</td>
<td>IP Addressing - ARP and RARP</td>
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<td>5</td>
<td>Topologies - Structured Cabling and Electricity</td>
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<td>6</td>
<td>The Application, Presentation, Session, and Transport Layers</td>
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<tr>
<td>7</td>
<td>PC Hardware and Software: Networking, Layered Communications, Encapsulation</td>
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Layer 2: Internetworking Devices; IP addressing
Topology; Structured Cabling
Electronics
Routing; Using the Router
Router Components
Router Startup and Setup
Router Configuration
IOS: TCP/IP; IP Addressing; Routing Protocols
Final Written and Skill-based Exams

II. Course Objectives*:

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

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

III. Instructional Processes*:

Students will:

1. Design a complex networking plan which incorporates advanced routing techniques. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy
2. Examine and implement solutions to challenging internetworking. Problem Solving and Decision Making Outcome, Technological Literacy Outcome
3. Use professional diagnostic tools to produce successfully implemented wide area networking products. Technological Literacy Outcome, Transitional Strategy
4. Participate in team projects involving installation, configuration, and upgrading of WAN software and hardware. Problem Solving and Decision Making 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, Transitional 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. Master basic content: OSI model, internetworking devices, IP addressing, LAN media and topologies, structured cabling, electronics.  A, B
2. Master lab skills: PC hardware & software, patch cables, installation of structured cabling; use of test equipment.  E
3. Master documentation skills: maintaining engineering journal; cable management techniques.  E
4. Master people skills: working in engineering teams, self and project management, oral exams, presentations.  E
5. Master basic content: review of 1st semester concepts; routing theory; router components; router setup and startup; router configuration; IOS; TCP/IP0; IP addressing; routing protocols.  A, B, C
6. Master lab skills: router configuration; associated hardware and software tools and techniques.  D, E
7. Master documentation skills: maintaining engineering journal; cable management techniques.  E
8. Master people skills: working in engineering teams, self and project management, oral exams, presentations.  E
9. Achieve awareness and access: basic technological literacy; awareness of IT careers; preparation for 2 and 4 yr. EE, CS, and IT programs; access to well-paying, learning-oriented jobs; ability to design, install, and maintain Internetworks.  B, C
10. Understand networking router theory and implementation.  C
11. Utilize advanced networking router configuration in the enterprise.  A
12. Understand associated hardware, software tools, and networking techniques.  C
13. Understand implementation of networking media management techniques.  C
14. Understand project management coordination.  B
15. Utilize working in networking team skills.  B, E
16. Understand basic technology literacy.  E
17. Demonstrate an awareness of IT careers.  A
*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures: 70% of grade

- 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.
- Two 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:

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: 30% of grade

- 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
61 - 70%  D
0 - 60%  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. (Pellissippi State Catalog)

B. Academic Dishonesty:

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

C. Other Policies:

Behavior is expected to conform to Pellissippi State Catalog and to the normal classroom behavioral standards.