PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

DESIGNING NETWORK INFRASTRUCTURE
NETW 2030

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

Catalog Course Description:
A study of analyzing business requirements for network infrastructure and designing appropriate network infrastructures. Topics include analyzing business and technical requirements; designing Windows 2000 network infrastructures, Internet connectivity solutions, wide area network infrastructures; and management implementation strategies for Windows 2000 networking.

Entry Level Standards:
The entering student should be skilled with the Windows 2000 Professional and Server operating systems, Microsoft Active Directory, and be able to demonstrate advanced computer knowledge. Problem solving and analytical skills are also important.

Prerequisite:
NETW 1220

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

Textbook and Supplies:
3 2" HD Diskettes
3-ring notebook w/pocket

Suggested Optional Supplementals:
Outside reading, magazines, the Internet, vendor materials.

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, Topic Overview, Schedule; Designing a Windows 2000 Network</td>
</tr>
<tr>
<td>2</td>
<td>Implementing TCP/IP on a Windows 2000 Network</td>
</tr>
<tr>
<td>3</td>
<td>Implementing NWLink</td>
</tr>
<tr>
<td>4</td>
<td>Monitoring Network Activity; Exam #1 review</td>
</tr>
<tr>
<td>5</td>
<td>Exam #1; Implementing IPSec(Internet Protocol Security)</td>
</tr>
<tr>
<td>6</td>
<td>Resolving Network Host Names</td>
</tr>
</tbody>
</table>
II. Course Objectives*:

A. Demonstrate knowledge of designing/planning a Microsoft Windows 2000 Network System. II,III,IV

B. Demonstrate knowledge of common network protocols. II,III,IV

C. Demonstrate knowledge of TCP/IP. III,IV

D. Demonstrate knowledge of NWLink. III,IV

E. Demonstrate knowledge of IPSec. III,IV

F. Demonstrate knowledge of host naming for Microsoft Windows 2000 networks. II,IV,VIII

G. Demonstrate knowledge of the Domain Name System (DNS). II,III,IV,VII

H. Demonstrate knowledge of the Windows Internet Name Service (WINS). III,IV

I. Demonstrate knowledge of Dynamic Host Configuration Protocol (DHCP). III,IV

J. Demonstrate knowledge of Microsoft Remote Access Services (RAS). III,IV

K. Demonstrate knowledge of Network Address Translation(NAT). III,IV

L. Demonstrate knowledge of Microsoft Certificate Services. II,III,IV

M. Demonstrate knowledge of implementing enterprise-wide network security. III,IV

N. Demonstrate client service, teamwork skills and good communications skills to resolve problems and complete tasks. I,II,IX

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

III. Instructional Processes*:
Students will:

1. Use Windows 2000 operating systems commands and utilities to perform practical tasks for computing. Technological Literacy Outcome, Problem Solving and Decision Making Outcome, Transitional Strategy, Active Learning Strategy

2. Demonstrate knowledge of networking, electronic communication, and associated subjects. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome


5. Handle and examine modern computing devices. Technological Literacy Outcome, Personal Development Outcome, Transitional Strategy, Active Learning Strategy

6. Prepare documents and presentations for management explaining computer networks and communications hardware/software, etc. to meet user requirements. Communication Outcome, Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome, Transitional Strategy, Active Learning Strategy

7. 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. Design/develop a network implementation plan. A,N

2. Describe common protocols supported by Windows 2000. B

3. Describe benefits of TCP/IP. C

4. Perform necessary TCP/IP calculations include subnet masking, etc. C,N

5. Install and configure TCP/IP in Windows 2000. C,N

6. Explain basic concepts of IP routing. C

7. Describe NWLink. D

8. Install, configure, and use Gateway Service for NetWare. D,N

9. Use Client Service for NetWare. D,N

10. Install, configure and use NWLink. D,N

11. Install and use Network Monitor. F,N
12. Discuss basic security concerns for networks. E,M
13. Explain the benefits of various security methods such as IPSec. E,M
14. Implement, configure, customize and monitor IPSec. E,M
15. Explain the benefits and uses of network host naming methods used in Windows 2000. F
17. Discuss the benefits and uses of WINS (Windows Internet Naming Service). H
18. Explain the benefits and uses of DHCP (Dynamic Host Configuration Protocol) as used in Windows 2000. I
20. Describe the benefits/costs/etc. of Remote Access Services (RAS). J
21. Plan and administer RAS user and security policies. J,N
22. Plan and implement IP routing on a RAS. J,N
23. Describe Virtual Private Networks (VPNs) and how they are integrated into a Windows 2000 network. K
24. Use routing and RAS with DHCP. K,N
25. Describe the concept and implementation of Network Address Translation (NAT). K
26. Install and configure NAT. K,N
27. Describe the concept of Digital Certificates and Certificate Authorities (CA). L
29. Plan and implement enterprise-wide network security. A,M,N
30. Plan and configure routing and remote access security. A,M,N
31. Plan and create remote access policies. A,M,N
32. Perform network security monitoring. A,M,N

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

V. Evaluation:

A. Testing Procedures:

Three (3) examinations each worth 200 points will be given. Each will be cumulative.

B. Laboratory Expectations:

Hands-on learning activities done individually and in teams will also serve as the basis for course evaluation.
C. Field Work:

N/A

D. Other Evaluation Methods:

Other assessment activities worth 400 points will consist of special projects, research papers, team activities, essays, short answer documents, or other work assigned.

E. Grading Scale:

<table>
<thead>
<tr>
<th>Points Range</th>
<th>Grade Letter</th>
<th>Grade Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>920 - 1000 points</td>
<td>A</td>
<td>(92% - 100%)</td>
</tr>
<tr>
<td>820 - 919 points</td>
<td>B</td>
<td>(82% - 91.9%)</td>
</tr>
<tr>
<td>700 - 819 points</td>
<td>C</td>
<td>(70% - 81.9%)</td>
</tr>
<tr>
<td>650 - 699 points</td>
<td>D</td>
<td>(65% - 69.9%)</td>
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<tr>
<td>&lt; - 649 points</td>
<td>F</td>
<td>(0% - 64.99%)</td>
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</tbody>
</table>

VI. Policies:

Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled required 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.