PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

HPC INTERNETWORKING SECURITY
HPC 1010

Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Revised: Fall 04

NOTE: This course is not designed for transfer credit.

Catalog Course Description:

This course provides instruction in understanding and implementing a comprehensive WAN level security alternative. While many knowledgeable information systems professionals are aware there are risks and threats, the nature and available defensive tools and techniques are often a great mystery. Topics include security architecture, PIX firewalls, router-based firewalls, encryption, IPSEC, and VPNs.

Entry Level Standards:

College level reading and math skills; keyboarding skills of at least 20 wpm; familiarity with the Cisco internetworking operating system; problem solving and analytical skills also important

Prerequisites:

None

Textbook(s) and Other Course Materials:


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

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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| 1    | Lesson 1: Overview of the Internet  
Lesson 2: Browsing the World Wide Web  
Lesson 3: E-Mail  
Lesson 4: FTP, Newsgroups, and Telnet  
Lesson 5: Objects, Plug-ins, and Viewers |
| 2    | Lesson 6: Search Engines  
Lesson 7: Security  
Lesson 8: E-Commerce |
| 3    | Lesson 1: Introduction to Web Page Authoring  
Lesson 2: Hypertext Markup Language (HTML) |
Lesson 3: HTML Coding
Lesson 4: HTML Horizontal Rules and Graphical Elements
Lesson 5: HTML Hyperlinks

4
Lesson 5: HTML Hyperlinks
Lesson 6: HTML Tables
Lesson 7: HTML Forms
Lesson 8: HTML Image Techniques

5
Midterm

6
Lesson 9: HTML Frames
Lesson 10: Graphical User Interface HTML Editors
Lesson 11: HTML Extensions

7
Lesson 1: Introduction to Networking
Lesson 2: Networking Protocols
Lesson 3: LANs and WANs

8
Lesson 4: TCP/IP Suite and Internet Addressing
Lesson 5: Internetworking Servers

9
Lesson 6: Server-side Scripting and Database Connectivity
Lesson 7: Network Security Essentials

10
Course Assessment and/or quizzes from Week 6 through Week 9 and/or CIW certification preparation.

11
Chapter 1- Security Overview
IPSec
Chapter 2 – Authentication
Chapter 3 – Attacks and Malicious Code

12
Chapter 4 - Remote Access
Chapter 5 – E-mail
Chapter 6 – Web Security

13
Chapter 7 – Directory and File Transfer Services
Chapter 8 – Wireless and Instant Messaging
Chapter 9 - Devices

14
Chapter 10 – Media and Medium
Chapter 11- Network Security Topologies
Chapter 12 – Intrusion Detection

15
Finals

II. Course Objectives*:

A. Demonstrate knowledge of a WAN structure designed for security. II, III, IV
B. Demonstrate knowledge of designing authentication for a WAN network. II, IV
C. Demonstrate knowledge of planning a WAN structure. III, IV
D. Demonstrate knowledge of designing group policy and security for the WAN. III, IV
E. Demonstrate knowledge of resource and file security. III, IV
F. Demonstrate knowledge of securing WAN devices. II, IV, VIII
G. Demonstrate knowledge of designing services security for WANs. II, III, IV, VIII
H. Demonstrate knowledge of planning a secure WAN infrastructure. III, IV
I. Demonstrate knowledge of securing data at the application layer of the OSI model. III, IV
J. Demonstrate knowledge of securing data with IPSec (Internet Protocol Security). III, IV
K. Demonstrate knowledge of securing access for remote users and networks. III, IV
L. Demonstrate knowledge of securing an VPN. III, IV
M. Demonstrate knowledge of securing Internet access. III, IV
N. Demonstrate knowledge of heterogeneous network secure access. III, IV
O. Demonstrate knowledge of designing a comprehensive network security plan. III, IV
P. 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 HPC program.

III. Instructional Processes*:

Students will:

1. Use firewall commands and utilities to perform practical tasks for network computing. *Active Learning Strategy*
2. Demonstrate knowledge of networking, electronic communication, and associated subjects. *Technological Literacy Outcome, Transitional Strategy*
3. Solve problems encountered in the subjects of security, encryption, and associated security subjects. *Technological Literacy Outcome, Transitional Strategy*
4. Participate in problem-solving teams. *Technological Literacy Outcome, Active Learning Strategy*
5. Handle and examine modern computing devices. *Technological Literacy Outcome, Transitional Strategy*
6. Prepare documents and presentations for management explaining computer networks and communications hardware/software, etc. to meet user requirements. *Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy*
7. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. *Active Learning Strategy*

*Strategies and outcomes listed after instructional processes reference TBR's goals for strengthening general education knowledge and skills, connecting course work 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 computer security to meet business requirements. A,B,C,D,P
2. Design security to meet technical requirements. A,B,C,D,P
3. Design WAN security structure. A,C,P
4. Design security policies. A,C,P
5. Design an authentication and authorization plan. A,C,P
6. Design an audit strategy. A,C,D,E,F,G,P
7. Design a router implementation plan. B,E,F,G,P
8. Determine services and protocols needed for WAN operation. B,E,F,G,P
11. Design/plan access lists to control network utilization. C,D,P
12. Implement encryption techniques in centralized management. C,D,P
13. Design/plan group security and IPSec payload. C,D,P
14. Secure access to file and print resources. B,C,D,E,F,P

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

V. Evaluation:

A. Testing Procedures:

Chapter exams and computer lab exercises will be averaged to determine the grade. Pretests and post quizzes may be given. A group project may be required. Teamwork may be factored as a plus or minus 10% or one letter grade

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 extra credit assessment activities may be assigned, each of which may include special projects, research papers, team activities, essays, short answer documents, or other work
assigned.

E. Grading Scale:

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

VI. Policies:

A. Attendance Policy:

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:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices: Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments. In addition to other possible disciplinary sanctions that may be imposed as a result of academic misconduct, the instructor has the authority to assign either (1) an F or zero for the assignment or (2) an F for the course.

C. Accommodations for disabilities:

If you need accommodation because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please inform the instructor immediately. Privately after class or in the instructor's office.

To request accommodations students must register with Services for Students with Disabilities: Goins 127 or 131, Phone: (865) 539-7153 or (865) 694-6751 Voice/TDD.