HPC INTERNETING SECURITY
HPC 1010

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

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 Reference Materials Basic to the Course:

3 2" HD Diskettes
3-Ring Notebook w/pocket

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

I. Week/Unit/Topic Basis:

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<tr>
<th>Week</th>
<th>Topic</th>
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<tr>
<td>1-2</td>
<td>Introduction, Understanding Security Risk and Threats</td>
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<td>3-4</td>
<td>Security Architecture</td>
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<td>5</td>
<td>First Line of Defense; The Perimeter Router</td>
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<td>6</td>
<td>Firewalls</td>
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<td>7</td>
<td>Secure PIX Firewall</td>
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<td>8</td>
<td>Configuring the PIX Firewall</td>
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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,VII
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. *Technological Literacy Outcome, Information Literacy Outcome, 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*

3. Solve problems encountered in the subjects of security, encryption, and associated security subjects. *Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Transitional Strategy*

4. Participate in problem-solving teams. *Communication Outcome, Problem Solving and Decision Making 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. *Communication Outcome, Problem Solving and Decision Making Outcome, Technological 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 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:

Twelve chapter exams each worth 100 points will be given. Pretests and post quizzes may be given. A group project will be required. Teamwork will count as 100 points.

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 100 points each 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.