HPC SECURITY MANAGEMENT
HPC 2000

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

NOTE: This course is not designed for transfer credit.

Catalog Course Description:

The course helps network professionals understand the risks to modern networks and how to install, configure, operate, manage, and verify Cisco network security products and Cisco IOS software features that enable network security.

Entry Level Standards:

The entering student should be skilled with the Cisco internetworking operating system. Problem solving and analytical skills are also important.

Prerequisites:

HPC 1010 (NETW 2530) or consent of instructor

Textbook(s) and Other Course Materials:


I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Evaluating Network Security Threats and Policy</td>
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<tr>
<td>2</td>
<td>Securing the Network Infrastructure</td>
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<td>3</td>
<td>Examining Cisco AAA Security Technology</td>
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<td>4</td>
<td>Configuring the Network Access Server for AAA Security</td>
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<tr>
<td>5</td>
<td>Configuring CiscoSecure ACS and TACACS+/RAD</td>
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<td>6</td>
<td>Configuring a Cisco Perimeter Router</td>
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<td>7</td>
<td>Configuring the Cisco IOS Firewall</td>
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<tr>
<td>8</td>
<td>PIX Firewall Basics</td>
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<tr>
<td>9</td>
<td>Configuring Access Through the PIX Firewall</td>
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</table>
II. Course Objectives*:

A. Develop a working understanding of the terminology and hardware devices associated with HPC internetworking security. II, III, V
B. Demonstrate basic fundamentals of HPC security concepts. III
C. Demonstrate applied principles of installing, configuring, and managing security devices. III
D. Exhibit a knowledge of security threats and WAN security systems. I, II
E. Exhibit a knowledge of HPC security software. II, IV
F. Develop an understanding of the technologies to combat security threats. II, IV

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

III. Instructional Processes*:

Students will:

1. Use internetworking security commands and utilities to perform practical tasks for secure High Performance Computing. Active Learning Strategy, Technological Literacy Outcome, Transitional Strategy
2. Solve problems in computer security within, Numerical Literacy Outcome
3. Use professionally accepted methods and materials in completion of applications. Technological Literacy Outcome
4. Use the Internet as a medium for obtaining documentation and instruction. Technological Literacy Outcome, Active Learning Strategy
5. Use the Computer-Based Training for obtaining instruction. Technological Literacy Outcome
6. Demonstrate client service, teamwork skills, and good communication skills to resolve problems and complete tasks. Technological Literacy Outcome
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 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 HPC computer security model to meet business requirements. A,B,C,D
2. Design security to meet HPC technical requirements. A,B,C,D, F
4. Design HPC security policies. A,C
5. Design an authentication and authorization plan to be invoked within the HPC environment. A,C
6. Design an audit strategy. A,C,D
7. Design router and switch implementation plan. B, D
8. Determine services and protocols needed for HPC operation. B, D
9. Design HPC network level and application layer firewalls. A, D
10. Design/plan defenses against network attacks. B,C,D
11. Design/plan access lists to control network utilization. C,D, F
12. Implement encryption techniques in centralized management within the HPC cluster. C,D
13. Design/plan group security and IPSec payload. C,D
14. Secure access to HPC file and print resources. B,C,D
15. Plan Virtual Private Network security for communication outside the HPC cluster. C, D
16. Plan/evaluate WAN security templates for other agencies. C, D

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

**V. Evaluation**:

**A. Testing Procedures**:

Unit Exams and Labs will be averaged to determine the final grade along with team and/or class participation may raise or lower the overall grade by 10%. There will be no make-up tests unless prior arrangements are made with the instructor.

**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 will consist of 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 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 (Pellissippi State Catalog).

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.