



# BROWARD COMMUNITY COLLEGE

## COURSE OUTLINE

LAST REVIEW: 2003-2004

NEXT REVIEW: 2008-2009

STATUS: A

**COURSE TITLE:** Cisco Networking Academy: Fundamentals of Network Security

**COMMON COURSE NUMBER:** CET 2660C

**CREDIT HOURS:** 4

**CONTACT HOUR BREAKDOWN**

*(per 16 week term)*

**CLOCK HOURS:**

*(Voc. Course ONLY)*

Lecture: 56

Lab: 8

Clinic: 0

Other: 0

**PREREQUISITE(S):** CET 1620C

**COREQUISITE(S):**

**PRE/COREQUISITE(S):**

**COURSE DESCRIPTION:** *(600 characters, maximum)*

This Cisco Networking Academy course focuses on security processes, with particular emphasis on hands-on skills in security policy design & management, security technologies, products & solutions, firewall and secure router design, installation, configuration, & maintenance, AAA implementation using routers and firewalls, Intrusion Detection (IDS) implementation using routers and firewalls, and VPN implementation using routers and firewalls.

### UNIT TITLES

1. Overview of Network Security
2. Basic Router and Switch Security
3. Router ACLs and CBAC
4. Router AAA Security
5. Intrusion Detection
6. IP Security
7. Easy VPN
8. PIX Firewall
9. Translations and Connections
10. Access Control Lists for the PIX Firewall
11. AAA on PIX Firewalls
12. PIX IDS
13. PIX Failover and System Maintenance
14. PIX VPN
15. PIX Device Manager



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## UNITS

### **Unit 1** Overview of Network Security

#### **General Outcome:**

**1.0** The student shall be able to present a basic overview of network security.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 1.1** Give an Overview of Network Security
- 1.2** Explain Vulnerabilities and Threats
- 1.3** Understand Security Framework and Policy
- 1.4** List Security Products and Solutions



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**Unit 2** Basic Router and Switch Security

**General Outcome:**

**2.0 The student shall be able to set up basic router and switch security.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**2.1 Describe General Router and Switch Security**

**2.2 Disable Unneeded Services**

**2.3 Secure the Perimeter Router**

**2.4 Perform Router Management**

**2.5 Secure Switches and LAN Access**



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## **Unit 3** Router ACLs and CBAC

### **General Outcome:**

**3.0** The student shall have an understanding of ACLs and CBAC.

### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**3.1** Explain Access Control Lists

**3.2** Describe Types of IP ACLs

**3.3** Explain Context-based Access Control (CBAC)

**3.4** Configure CBAC (Task 1 and 2)

**3.5** Perform Task 3: Port to Application Mapping (PAM)

**3.6** Perform Task 4: Define Inspection Rules

**3.7** Perform Task 5: Inspection Rules and ACLs Applied to Router Interfaces

**3.8** Perform Task 6: Test and Verify CBAC



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**Unit 4** Router AAA Security

**General Outcome:**

**4.0 The student shall understand AAA security.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**4.1** Institute Secure Network Access

**4.2** Explain Network Access Server (NAS) AAA Authentication Process

**4.3** Cisco Secure ACS

**4.4** Provide AAA Servers Overview and Configuration

**4.5** Explain and employ The Cisco IOS Firewall Authentication Proxy



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**Unit 5** Intrusion Detection

**General Outcome:**

**5.0 The student shall be able to perform basic intrusion detection.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 5.1 Configure IOS Firewall IDS
- 5.2 Set Up the Cisco Firewall IDS
- 5.3 Monitor with Logging and Syslog
- 5.4 Explain SNMP
- 5.5 Manage the Router
- 5.6 Use Security Device Manager (SDM)



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**Unit 6** IP Security

**General Outcome:**

**6.0 The student shall understand IPSec security features.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 6.1 Describe Virtual Private Networks
- 6.2 Explain the IOS Cryptosystem
- 6.3 Discuss IPSec
- 6.4 Implement Site-to-Site IPSec VPN Using Pre-shared Keys
- 6.5 Explain Digital Certificates
- 6.6 Configure Site-to-Site IPSec VPN Using Digital Certificates



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**Unit 7** Easy VPN

**General Outcome:**

**7.0** The student shall be able to use Easy VPN.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**7.1** Employ Remote Access VPN

**7.2** Use Cisco Easy VPN

**7.3** Configure Cisco VPN 3.5 Client

**7.4** Implement VPN Enterprise Management



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**Unit 8** PIX Firewall

**General Outcome:**

**8.0** The student shall be able to setup a PIX firewall.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 8.1** Present an Introduction to Firewalls
- 8.2** Describe The Cisco PIX Security Appliance
- 8.3** Explain Getting Started - User interface
- 8.4** Set up Routing and Multicast Configuration
- 8.5** Employ PIX Dynamic Host Configuration Protocol (DHCP)



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**Common Course Number:** CET 2660C

**Unit 9** Translations and Connections

**General Outcome:**

**9.0 The student shall understand translations and connections.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 9.1 Discuss Transport Protocols
- 9.2 Explain Network Address Translations
- 9.3 Configure DNS Support
- 9.4 Explain Connections
- 9.5 Explain Port Address Translation (PAT)
- 9.6 Set up Multiple Interfaces on a PIX Security Appliance



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**Unit 10** Access Control Lists for the PIX Firewall

**General Outcome:**

**10.0** The student shall be able to use access lists for PIX firewalls.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**10.1** Describe Access Control Lists and the PIX Security Appliance

**10.2** Use ACLs

**10.3** Perform Filtering

**10.4** Employ Object Grouping

**10.5** Use Nested Object Groups



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**Common Course Number:** CET 2660C

**Unit 11** AAA on PIX Firewalls

**General Outcome:**

**11.0** The student shall be able to use AAA on PIX firewalls.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**11.1** Discuss AAA

**11.2** Set up Authentication Configuration

**11.3** Prepare Authorization and Accounting Configuration

**11.4** Explain the use of PPPoE and the PIX Security Appliance



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**Unit 12**      PIX IDS

**General Outcome:**

**12.0** The student shall be able to perform PIX intrusion detection.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**12.1** Discuss Advanced Protocols

**12.2** Use Multimedia Support

**12.3** Set up Attack Guards

**12.4** Implement Intrusion Detection

**12.5** Explain Shunning

**12.6** Perform Syslog Configuration on the PIX

**12.7** Employ SNMP



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**Unit 13** PIX Failover and System Maintenance

**General Outcome:**

**13.0 The student shall be able to employ PIX failover and perform system maintenance.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 13.1 Understand Failover**
- 13.2 Explain Serial Cable Failover Configuration**
- 13.3 Discuss LAN-Based Failover**
- 13.4 Perform System Maintenance via Remote Access**
- 13.5 Use Command Authorization**
- 13.6 Perform PIX Security Appliance Password Recovery and Upgrades**



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**Unit 14**      PIX VPN

**General Outcome:**

**14.0** The student shall be able to setup a PIX VPN.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**14.1** Explain how the PIX Security Appliance Enables a Secure VPN

**14.2** List the Tasks to Configure VPN

**14.3** Perform Task 1 - Prepare to Configure VPN Support  
14.3.1 Step 1 - prepare for IKE

**14.4** Perform Task 2 - Configure IKE Parameters

**14.5** Perform Task 3 - Configure IPSec Parameters

**14.6** Perform Task 4 - Test and Verify VPN Configuration

**14.7** Employ The Cisco VPN Client

**14.8** Scale PIX Security Appliance VPNs



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**Common Course Number:** CET 2660C

**Unit 15**      PIX Device Manager

**General Outcome:**

**15.0** The student shall be able to use PIX Device Manager.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

**15.1** Use PIX Security Appliance Management Tools

**15.2** Employ The Cisco PIX Device Manager

**15.3** Plan Preparation for PDM

**15.4** Use PDM to Configure the PIX Security Appliance

**15.5** Use PDM to Create Site-to-Site VPNs 15.5.1 Overview

**15.6** Use PDM to Create Remote Access VPNs

**15.7** Perform Enterprise PIX Firewall Management