

IT 0130 - CISCO CCNA 3 ENTERPRISE NETWORKING, SECURITY AND AUTOMATION

Catalog Description

Prerequisite: Completion of IT 125 with grade of "C" or better

Hours: 72 (54 lecture, 18 laboratory)

Description: This is the third of three courses that are aligned to the CCNA Certification Exam. In Enterprise Networking, Security, and Automation, students will take the skills and knowledge that they learned in the previous two courses and apply them to wide area networks (WANs). WANs are large, complex networks that require advanced understanding of network operation and security. This class also introduces students to two important areas of networking: virtualization and automation. By the end of this course, students will be able to configure, troubleshoot, and secure enterprise network devices. Students will be versed in application programming interfaces (APIs) and the configuration management tools that make network automation possible. When students have completed ENSA, they will have gained the practical experience they need to prepare for the CCNA certification exam. (CSU)

Course Student Learning Outcomes

- CSLO #1: Describe the design considerations for wired LANs.
- CSLO #2: Describe the criteria for selecting network devices.
- CSLO #3: Demonstrate the use of VTP and DTP in creating VLANs.
- CSLO #4: Describe how Layer 3 switches are used in modern corporate networks.

Effective Term

Fall 2023

Course Type

Credit - Degree-applicable

Contact Hours

72

Outside of Class Hours

90

Total Student Learning Hours

162

Course Objectives

Lecture Objectives:

1. Describe basic OSPF features and characteristics.
2. Describe the OSPF packet types used in single-area OSPF.
3. Explain how single-area OSPF operates.
4. Describe tools used by threat actors to exploit networks.
5. Explain how TCP and UDP vulnerabilities are exploited by threat actors.
6. Explain how ACLs filter traffic.
7. Explain the purpose and function of NAT.
8. Compare modern WAN connectivity options.

9. Describe different types of VPNs.
10. Explain how REST enables computer to computer communications.

Lab Objectives:

1. Configure single-area OSPFv2 in a point-to-point network.
2. Demonstrate how to create ACLs
3. Configure static, and dynamic NAT, and PAT using the CLI.
4. Research broadband internet access options.
5. Configure and verify NTP
6. Use CDP to map a network
7. Backup configuration files
8. User a TFTP server to upgrade a Cisco IOS image.
9. Troubleshoot enterprise networks

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Objective Examinations
 - Example: Objective Quizzes/Exams will be given at the end of each chapter consisting of multiple choice questions demonstrating knowledge of the chapter concepts. The instructor will be checking for accuracy. Example quiz question: Which OSPF packet contains the different types of link-state advertisements? a. hello b. DBD c. LSR d. LSU
- Problem Solving Examinations
 - Example: You are a recently hired LAN technician, and your network manager has asked you to demonstrate your ability to configure a small LAN. Your tasks include configuring initial settings on two switches using the Cisco IOS and configuring IP address parameters on host devices to provide end-to-end connectivity. You are to use two switches and two hosts on a cabled and powered network. Rubric grading.
- Skill Demonstrations
 - Example: Prepare a simulated-network presentation using PacketTracer to explain how the following network operates:
 - One 2911 Series router - One 3560 switch - Four user workstations - One printer Rubric grading.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion
- Distance Learning

Lab:

1. Lab assignments will reinforce concepts taught during class lecture. Instructor will demonstrate how to configure a router for single area OSPF operation. All of the router configuration commands will be provided that are required for successful configuration. The student

will be required to demonstrate proficiency/accuracy in this skill. (Lab Objective 1)

Lecture:

1. Instructors will use the lecture/discussion method to present advanced switching and routing concepts, including: How OSPF routing protocol is used in modern corporate networks. (Lecture Objectives 1 & 2)

Distance Learning

1. Using an online virtual lab system, instructor will provide students with a written scenario, asking them to configure access control lists (ACLs) on a Cisco router. Students will provide screenshots at key points in the lab to demonstrate proficiency/accuracy in these skills. (Lab Objective 2)

Typical Out of Class Assignments

Reading Assignments

1. Read the chapter about VPNs and be prepared for discussion. 2. Students will be using resources on the Cisco Network Academy web site. This website contains supplemental course content that will enhance the students learning experience. Students will be required to use information from this resource in their assignments.

Writing, Problem Solving or Performance

1. PacketTracer lab assignments will require students to perform technical tasks and provide written responses that demonstrate logical analysis and problem solving. Example: Students asked to complete lab 10.7.6 Use a TFTP Server to Upgrade a Cisco IOS Image 2. Chapter review questions will be assigned to students and must be completed before the start of each class. Review questions will require written answers that demonstrate problem solving and an understanding of chapter concepts. Example: Answer questions at end of the chapter about functions of OSPF.

Other (Term projects, research papers, portfolios, etc.)

Required Materials

- Enterprise Networking, Security, and Automation Companion Guide (CCNAv7)
 - Author: Cisco Networking Academy
 - Publisher: Cisco Press
 - Publication Date: 2020
 - Text Edition: 1st
 - Classic Textbook?: No
 - OER Link:
 - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.