CCNA 7: Enterprise Networking, Security, and Automation

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Course Description

Enterprise Networking, Security, and Automation (ENSA) describes the architecture, components, operations, and security to scale for large, complex networks, including wide area network (WAN) technologies. The course emphasizes network security concepts and introduces network virtualization and automation. Students learn how to configure, troubleshoot, and secure enterprise network devices and understand how application programming interfaces (API) and configuration management tools enable network automation.

Course Objectives

By the end of the course, students will be able to:

- Configure single-area OSPFv2 in both point-to-point and multiaccess networks.
- Explain how to mitigate threats and enhance network security using access control lists and security best practices.
- Implement standard IPv4 ACLs to filter traffic and secure administrative access.
- Configure NAT services on the edge router to provide IPv4 address scalability.
- Explain techniques to provide address scalability and secure remote access for WANs.
- Explain how to optimize, monitor, and troubleshoot scalable network architectures.
- Explain how networking devices implement QoS.
- Implement protocols to manage the network.
- Explain how technologies such as virtualization, software defined networking, and automation affect evolving networks.

Course Outline

Module 1: Single-Area OSPFv2 Concepts
Module 2: Single-Area OSPFv2 Configuration
Module 3: Network Security Concepts
Module 4: ACL Concepts
Module 5: ACLs for IPv4 Configuration
Module 6: NAT for IPv4
Module 7: WAN Concepts

Module 8: VPN and IPsec Concepts
Module 9: QoS Concepts
Module 10: Network Management
Module 11: Network Design
Module 12: Network Troubleshooting
Module 13: Network Virtualization
Module 14: Network Automation

Curriculum & Useful URLs

Students can access the curriculum on the Internet at cisco.netacad.net (there is no paper textbook). A screen name and password will be used to login into Cisco Network Academy which is Cisco's on-line learning environment.

Other Useful URLs: ⌐ Moodle: https://moodle.helenaschools.org/

Classroom Expectations

BE RESPONSIBLE

- Be seated when bell rings (5 or more minutes tardy = absent)
- No food or drinks except for those listed in handbook
- Take care of the equipment & clean up after yourself

BE INVOLVED

- **You have to be able to read the curriculum and complete on-line assessments, activities and labs to do well in this class. If you are unable to do this, this is not the class for you.**
- Stay awake
- Work hard on <u>Cisco</u> work the whole period
  - Don't use Cisco time to work on other classes.
  - Internet is only for Cisco work (see HHS AUP)
- **Cellphones and headphones are not allowed** – both interfere with being able to get the most out of the class

BE RESPECTFUL

- Compliment people instead of putting them down
- Don't be disruptive (out of seat, talking when I am talking, etc.)

BE A GRADUATE

- Don't cheat – all parties involved will receive a 0 if caught

GRADE CALCULATION

- Assignments 70%   Quizzes/Tests 30%
- Semester Grade = Q1/Q3 40%, Q2/Q4 40% & Final 20%

GRADING Scale

- 100-92 = A   91-90 = A-   89-88 = B+   87-82 = B   81-80 = B-
- 79-78 = C+   77-72 = C   71-70 = C-   69-68 = D+   67-62 = D
- 61-60 = D-   59 & below = F

LATE WORK

- 20% off on any assignment that is turned in late

ABSENCES

- Check assignments on my webpage
- New assignments: 2 days for 1st day missed; 1 for all others
  - Previously assigned work will be due on original due date
  - Previously scheduled tests will be taken on return to class