

# CCNA 3: Enterprise Networking, Security, and Automation (ITCC 2320)

## CREDIT

3 semester credit hours (2 hours lecture, 4 hours lab)

## MODE OF INSTRUCTION

Hybrid

## PREREQUISITE/CO-REQUISITE:

ITCC 1314, ITCC 1340

## COURSE DESCRIPTION

Welcome to the **Enterprise Networking, Security, and Automation (ENSA)** course. This third course in the CCNA curriculum describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. This course covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access along with the introduction of software-defined networking, virtualization, and automation concepts that support the digitalization of networks. Students gain skills to configure and troubleshoot enterprise networks and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application programming interfaces (APIs) enable network automation.

## COURSE OBJECTIVES

Upon completion of this course, the student will be able to

- Explain how single-area OSPF operates in both point-to-point and broadcast multiaccess networks.
- Verify single-area OSPFv2 in both point-to-point and broadcast multiaccess networks.
- Explain how vulnerabilities, threats, and exploits can be mitigated to enhance network security.
- Explain how ACLs are used as part of a network security policy.
- Implement standard IPv4 ACLs to filter traffic and secure administrative access.
- Configure NAT services on the edge router to provide IPv4 address scalability.
- Explain how WAN access technologies can be used to satisfy business requirements.
- Explain how VPNs secure site-to-site and remote access connectivity.
- Explain how networking devices implement QoS.
- Implement protocols to manage the network.
- Explain the characteristics of scalable network architectures.
- Troubleshoot enterprise networks.
- Explain the purpose and characteristics of network virtualization.
- Explain how network automation is enabled through RESTful APIs and configuration management tools.



**LAMAR INSTITUTE  
OF TECHNOLOGY**

**INSTRUCTOR CONTACT INFORMATION**

Instructor: Patrick Stewart

Email: spstewart@lit.edu

Office Phone: 409-880-2279

Office Location: Wayne A. Reaud Administration Building, Lamar University

Office Hours: By appointment only

**REQUIRED TEXTBOOK AND MATERIALS**

List required texts and materials.

**ATTENDANCE POLICY**

Instructor must include their attendance policy

**DROP POLICY**

If you wish to drop a course, you are responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

**COURSE CALENDAR**

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
Week 1	Modules 1 - 2: OSPF Concepts and Configuration		Packet Tracer 1.0.5, 2.2.13  Quiz 1.4.2, 2.7.5
EXAM			Module 1 – 2 EXAM (Cisco Netacad)
Week 2	Module 3: Network Security Concepts		Quiz 3.11.3
Week 3	Module 4 – 5: ACL Concepts		Packet Tracer 4.1.4, 5.1.8, 5.2.7

	and Configuration		Quiz 4.5.2, 5.5.4
<b>EXAM</b>			<b>Module 3 – 5 EXAM (Cisco Netacad)</b>
Week 4	Module 6: NAT for IPv4		Packet Tracer 6.4.5, 6.5.6  Quiz 6.8.4
Week 5	Module 7 – 8: WAN Concepts / VPN and IPsec Concepts		Quiz 7.6.3, 8.4
<b>EXAM</b>			<b>Module 6 – 8 EXAM (Cisco Netacad)</b>
Week 6	Module 9 – 10: QOS Concepts / Network Management		Packet Tracer 10.1.5, 10.3.4, 10.6.10  Quiz 9.6.2, 10.8.4
Week 7	Module 11 – 12: Network Design / Network Troubleshooting		Packet Tracer 12.5.13  Quiz 12.6.4
<b>EXAM</b>			<b>Module 9 – 12 EXAM (Cisco Netacad)</b>
Week 8	Module 13: Network Virtualization		Quiz 13.6.3
Week 9	Module 14: Network Automation		Quiz 14.7.2
<b>EXAM</b>			<b>Module 13 – 14 EXAM (Cisco Netacad)</b>

## **COURSE EVALUATION**

Final grades will be calculated according to the following criteria:

Labs	30%
Study Guides	10%
Module Tests	30%
Final Exam	30%

## **GRADE SCALE**

- 90-100 A
- 80-89 B
- 70-79 C
- 60-69 D
- 0-59 F

## **TECHNICAL REQUIREMENTS**

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

## **DISABILITIES STATEMENT**

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email [specialpopulations@lit.edu](mailto:specialpopulations@lit.edu). You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](#).

## **STUDENT CODE OF CONDUCT STATEMENT**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at

[www.lit.edu](http://www.lit.edu). Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

### **STARFISH**

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

### **ADDITIONAL COURSE POLICIES/INFORMATION**

Insert additional course policies/information specific to your section here.