



## MASTER COURSE OUTLINE

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## COURSE TITLE

Cisco Networking: Routing, Switching, & Wireless

## GENERAL COURSE INFORMATION

Dept.: CS

Course Num: 172

(Formerly: CS 156)

CIP Code: 11.0901

Intent Code: 21

Program Code: 527

Credits: 6

Total Contact Hrs Per Qtr.: 88

Lecture Hrs: 44

Lab Hrs: 44

Other Hrs:

Distribution Designation: General Elective (GE)

## COURSE DESCRIPTION (as it will appear in the catalog)

This course focuses on switching technologies and router operations that support small-to-medium business networks and includes wireless local area networks (WLANs) and security concepts. Students learn key switching and routing concepts. By the end of this course, students will be able to perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic WLAN. This is the second of three courses comprising the Cisco CCNAv7 curricula and covers the technical knowledge and skills required to take the Cisco CCNA exam.

## PREREQUISITES

CS 171

## TEXTBOOK GUIDELINES

Textbook and materials to be determined by CS Faculty

## COURSE LEARNING OUTCOMES

*Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:*

1. Configure devices by using security best practices.
2. Explain how Layer 2 switches forward data.
3. Implement VLANs and trunking in a switched network.
4. Troubleshoot inter-VLAN routing on Layer 3 devices.
5. Explain how STP enables redundancy in a Layer 2 network.
6. Troubleshoot EtherChannel on switched links.
7. Implement DHCPv4 to operate across multiple LANs.
8. Configure dynamic address allocation in IPv6 networks.
9. Explain how FHRPs provide default gateway services in a redundant network.
10. Explain how vulnerabilities compromise LAN security.
11. Implement switch security to mitigate LAN attacks.
12. Explain how WLANs enable network connectivity.
13. Implement a WLAN using a wireless router and WLC.
14. Explain how routers use information in packets to make forwarding decisions.
15. Configure IPv4 and IPv6 static routes.

16. Troubleshoot static and default route configurations

**INSTITUTIONAL OUTCOMES**

- IO1 **Communication:** Students will be able to communicate clearly and effectively within a workplace context
- IO2 **Quantitative Reasoning:** Analyze and solve computational problems using a modern program language
- IO3 **Human Relations/Workplace Skills:** Students will be able to demonstrate teamwork, ethics, appropriate safety awareness and/or workplace specific skills

**COURSE CONTENT OUTLINE**

1. Basic Device Configuration
2. Switching Concepts
3. VLANs
4. Inter-VLAN Routing
5. STP
6. Etherchannel
7. DHCPv4
8. SLAAC and DHCPv6 Concepts
9. FHRP Concepts
10. LAN Security Concepts
11. Switch Security Configuration
12. WLAN Concepts
13. WLAN Configuration
14. Routing Concepts
15. IP Static Routing
16. Troubleshoot Static and Default Routes

**DEPARTMENTAL GUIDELINES** *(optional)*

This is the second course in the newly revised Cisco Networking Academy CCNAv7 Routing and Switching curricula. Students will be prepared to take the Cisco CCNA® certification exam after completing CS 171, CS 172 and CS 173.

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**DIVISION CHAIR APPROVAL**

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**DATE**