



Western Technical College

10151115 Cisco 4: Wireless and Mobile Security

Course Outcome Summary

Course Information

Description	The Wireless and Mobile Security course delivers the wireless knowledge and skills required to secure wireless LANs and WANs. Students will learn and implement the protocols used to configure and manage wireless networks and the technologies used to encrypt and secure the connectivity of mobile infrastructures and end user devices.
Career Cluster	Law, Public Safety, Corrections and Security
Instructional Level	Associate Degree Courses
Total Credits	3
Total Hours	90

Textbooks

No textbook required.

Program Outcomes

1. Identify security strategies.
2. Implement secure infrastructures.
3. Conduct security testing.
4. Analyze security data.
5. Mitigate risk.
6. Develop security documentation.

Course Competencies

1. **Examine the fundamentals of wireless networking.**

Assessment Strategies

- 1.1. Written Objective Test
- 1.2. Project

Criteria

You will know you are successful when

- 1.1. you describe the role of regulatory agencies within the Wireless Networking Industry.
- 1.2. you compare similarities and differences between concepts used in Wi-Fi technology.
- 1.3. you describe the purpose and function of each wireless component.
- 1.4. you identify different antennas based on features.
- 1.5. you install an antenna for the needed application.

Learning Objectives

- 1.a. Identify the roles of wireless networking organizations (IEEE, Wi-Fi Alliance, regulatory authorities, etc.)
- 1.b. Identify basic characteristics of Wi-Fi technologies.
- 1.c. Identify wireless network components.
- 1.d. Analyze the purpose of different types of antennas (omni/semi/highly directional, etc.)
- 1.e. Practice antenna installation.

2. Examine WLAN security technologies best practices.

Assessment Strategies

- 2.1. Written Product
- 2.2. Demonstration

Criteria

You will know you are successful when

- 2.1. you identify WLAN technologies security methods.
- 2.2. you configure access points within provided guidelines and standards.
- 2.3. you setup security on a SOHO wireless router.

Learning Objectives

- 2.a. Examine the purpose for wireless encryption.
- 2.b. Identify wireless networking optimization procedures.
- 2.c. Identify WLAN security technologies protocols.
- 2.d. Identify guidelines to properly place a wireless access point.

3. Troubleshoot WLAN setup.

Assessment Strategies

- 3.1. Skill Demonstration

Criteria

You will know you are successful when

- 3.1. you use resource sharing in a wireless network environment
- 3.2. you follow proper troubleshooting procedures
- 3.3. you document troubleshooting steps
- 3.4. you use technical resources
- 3.5. you correct wireless network Bugs

Learning Objectives

- 3.a. Repair wireless network bugs.
- 3.b. Troubleshoot wireless network bugs.
- 3.c. Follow safety guidelines and procedures.

4. Perform a wireless site survey.

Assessment Strategies

- 4.1. Skill Demonstration

Criteria

You will know you are successful when

- 4.1. you convey the need for a spread spectrum analyzer.
- 4.2. you identify and describe the site survey methods.
- 4.3. you follow industry standards for conducting a site survey.

- 4.4. you create a wireless site protocol analysis.
- 4.5. you document heatmap wireless survey.

Learning Objectives

- 4.a. Describe the purpose of various site surveys (manual, predictive).
- 4.b. Identify the methodologies used for conducting a site survey.
- 4.c. Implement a wireless LAN
- 4.d. Create and document a heatmap wireless survey.
- 4.e. Create and document a Predictive Modeling wireless site survey.
- 4.f. Create and document a wireless site Protocol Analysis.

5. Set up Enterprise Wireless Access Points.

Assessment Strategies

- 5.1. Skill Demonstration

Criteria

You will know you are successful when

- 5.1. you verify the WLAN controller is successfully communicating with wireless access points.
- 5.2. you apply technology tools effectively.
- 5.3. you verify Wireless Access points are configured correctly based on guidelines provided by industry standards.

Learning Objectives

- 5.a. Follows safety guidelines and procedures.
- 5.b. Install wireless access points based on presented plan.
- 5.c. Configure WLAN controller to wireless access points.
- 5.d. Optimize wireless access points to meet the needs of each unique network.
- 5.e. Customize wireless access point software to meet scenario specifications

6. Examine mobile device management protocols.

Assessment Strategies

- 6.1. Written Product
- 6.2. Demonstration

Criteria

You will know you are successful when

- 6.1. you summarize MDM softwares.
- 6.2. you setup a MDM environment.
- 6.3. you enroll mobile devices into the program.
- 6.4. you remotely manage devices through the MDM software.
- 6.5. you identify results of connecting mobile devices to different wireless networks.

Learning Objectives

- 6.a. Research MDM software used to manage mobile devices.
- 6.b. Examine components of an MDM environment.
- 6.c. Explore ways to enroll mobile devices into a program.
- 6.d. Determine effective software to remotely manage mobile devices.

7. Apply offensive security techniques to ensure WLAN security.

Assessment Strategies

- 7.1. Demonstration

Criteria

You will know you are successful when

- 7.1. you build an extended service set.
- 7.2. you apply penetration testing tools to hack your own WLAN.
- 7.3. you identify breaches into your WLAN based on common hacks.
- 7.4. you harden your WLAN to prevent further access.

Learning Objectives

- 7.a. Define offensive security.
- 7.b. Examine common "tricks" hackers use to gain access to WLANs.
- 7.c. Determine strategies to harden WLANs from access.

8. Create a network upgrade proposal.

Assessment Strategies

- 8.1. Project
- 8.2. Presentation

Criteria

You will know you are successful when

- 8.1. you summarize the goals of the client (timeline, budget, needs of network, etc.).
- 8.2. you identify the scope of the project.
- 8.3. you present several options to upgrade the network.
- 8.4. you justify the best option for client based on goals.
- 8.5. you present your proposal to client.

Learning Objectives

- 8.a. Research a given network configuration.
- 8.b. Identify potential weaknesses or areas for upgrades within the network.
- 8.c. Explore options for upgrading the network.
- 8.d. Consider client needs (including timeline, budget, current and future use, overall project goals).
- 8.e. Make recommendation to client for network upgrades.

9. Create a secure SOHO (Small Office/Home Office) network.

Assessment Strategies

- 9.1. Project

Criteria

You will know you are successful when

- 9.1. you connect a router to the internet.
- 9.2. you set up a switch.
- 9.3. you setup wireless access points.
- 9.4. you configure end devices to function.
- 9.5. you troubleshoot the network security.
- 9.6. you verify the network is functional.
- 9.7. you adjust components to ensure SOHO network is secure.
- 9.8. you demonstrate proof of concept for the SOHO functionality.

Learning Objectives

- 9.a. Examine the goals of the SOHO for the client.
- 9.b. Identify router needs for SOHO.
- 9.c. Identify switch needs for SOHO.
- 9.d. Examine wireless access points for SOHO.
- 9.e. Determine best configuration for end devices to function.