



Certified Wireless Network Administrator (CWNA)

COURSE OVERVIEW

Get a head start right out of the gate with a Certified Wireless Network Administrator (CWNA) certification. It is the base certification for Enterprise Wi-Fi within the CWNP family of certifications and a springboard toward earning your security, design, analysis, and network expert certifications. Achieving it enhances your networking career profile, providing evidence that you have sought after Wi-Fi knowledge and skills.

The goal of this course is to add Wi-Fi expertise to a networking professional's skill set while covering all **CWNA-109** exam topics. The course begins with discussion topics and hands-on lab exercises covering the basic operation of 802.11 Wi-Fi technology. Once a base of Wi-Fi knowledge is established, enterprise relevant topics such as Wi-Fi design, security, and troubleshooting are covered. You will use enterprise-class hardware and software tools during live lab exercises, all accessible remotely for any instructor-led or virtual class. As an added bonus, you will receive a free exam voucher.

WHO WILL BENEFIT FROM THIS COURSE?

- Administrators: network, systems, infrastructure, security, and LAN/WLANs
- Support professionals: technical assistance and field support
- Designers: network, systems, and infrastructure
- Developers: wireless software and hardware products
- Consultants and integrators: IT and security
- Decision-makers: infrastructure managers, IT managers, security directors, chief security officers, and chief technology officers
- CCNA's

COURSE OBJECTIVES

What You'll Learn attending the Enterprise Wi-Fi Administration course:

- Background and roles of Wi-Fi governing bodies, including the IEEE and Wi-Fi Alliance
- Radiofrequency properties and behaviors
- Wireless signal fundamentals, including measurement principles
- Antenna information, including types and installation best practices
- Wi-Fi standards, including 802.11 amendments ax, ad, af, and ah.
- Wi-Fi device types and infrastructure options
- Wi-Fi communications processes, including connection, roaming, and data transfer
- General troubleshooting tips to common real-world 802.11 wireless issues
- Wi-Fi architecture best practices, including both network and wireless design



- Similarities, differences, and peculiarities about Wi-Fi deployments in differing environments (offices, K-12 education, health care facilities, and more)
- Security standards, best practices, known vulnerabilities, and remediation techniques for Wi-Fi networks
- Site surveying, including requirements gathering, design, installation, and validation
- Troubleshooting methodology, tools, and techniques, along with common issues

COURSE OUTLINE

WLAN and Networking Industry Organizations

- Wi-Fi Related Organizations
- The IEEE
- PHY Amendments
- 802.11 Amendments
- Wi-Fi Alliance
- PoE (802.3)

RF Characteristics and Behavior

- Electromagnetic Spectrum
- Wavelength, amplitude, and other RF characteristics
- Reflection, refraction, and other RF behavior
- RF Propagation
- Basic Types of Modulation

RF Mathematics and Measurements

- RF units of measure
- Basic RF mathematics
- RF signal measurements
- Understand link budgets

RF Antennas and Hardware

- RF Units of Measure
- Types of Antennas and Antenna Systems Commonly Used With 802.11 WLANs
- Antenna Polarization and Gain
- Antenna Implementation
- Types of Antenna Cables, Connectors, and Other Accessories

802.11 PHYs and Network Types

- 802.11 PHYs and Network Types
- 802.11 Frequency Bands
- 802.11 Channels Explained
- OSI Model Layers and Wi-Fi
- 802.11 Physical Layers (PHYs)
- Throughput vs. Data Rate
- RF Modulation Methods
- 802.11 Use Case Scenarios
- WLAN Operating Modes including BSS, ESS and Roaming



802.11 Network Devices

- Access Point Features and Capabilities
- AP and WLAN Management Systems
- Wireless Monitoring Systems (Analytics)
- WLAN Controller Functionality
- Network Architecture Planes
- WLAN Bridging
- Client Devices
- Client Device OS Configuration
- Power over Ethernet (PoE) Functionality

802.11 MAC Operations

- 802.11 Frames
- Frame Aggregation
- Guard Interval
- General Frame Format
- PHY Preamble
- Management, Control, and Data Frames
- Locating WLANs

802.11 Channel Access Methods

- Differences between CSMA/CD and CSMA/CA
- Distributed Coordination Function (DCF)
- Network Allocation Vector (NAV)
- Clear Channel Assessment (CCA)
- Interframe Spacing (IFS)
- Contention Window (CW)
- Quality of Service in 802.11 WLANs
- Hybrid Coordination Function (HCF)
- Additional Control Frames and Protection Modes

WLAN Network Architectures

- Control, Management, and Data Planes
- WLAN Controller Solutions
- Network Architectures
- RF Channel Planning
- Service Set Configurations
- Cell Sizing and Interference

WLAN Requirements and Solutions

- Explore WLAN Deployment Scenarios
- BYOD and Guest Access
- Mobile Device Management
- Radio Resource Management (RRM) and other automatic RF management solutions
- Additional Management Features



Security Solutions for WLANs

- Additional Authentication Features
- Deprecated Standard Security
- Weak Security Mechanisms
- Pre-shared Key and IEEE 802.1X/EAP
- WPA3-Simultaneous Authentication of Equals (SAE)
- WPA3 Opportunistic Wireless Encryption (OWE)
- 6GHz 802.11ax Security Requirements
- Wireless Intrusion Prevention Systems (WIPS)
- Protocol and Spectrum Analysis for Security
- Using Secure Protocols

Site Surveys, Network Design, and Validation

- Survey Processes
- Understanding Requirements
- Verify Design Requirements
- Documentation
- Locating Interference
- Spectrum Analysis
- Application and Throughput Testing
- Protocol Analysis

WLAN Troubleshooting

- CWNP Troubleshooting Methodology
- Protocol Analysis Troubleshooting Features
- Spectrum Analysis Troubleshooting Features
- RF Interference
- Hidden Nodes
- Connectivity Problems

Classroom Live Lab

Remote Lab Familiarization

- Overview
- Task 1: Navigate the Sunset Learning Institute Remote Lab
- Task 2: Closing the Lab

Lab 1: Visualizing RF Principles

- Activity Objective
- Task 1: Download files to the Pod-AdminPC in the Remote Lab.
- Task 2: Use Ekahau Pro to visualize Free Space Path Loss
- Task 3: Use Ekahau Pro to Visualize Attenuation
- Task 4: Closing the Lab



Lab 2: RF Mathematics

- Activity Objective
- Required Resources
- Task 1: Complete These Power Conversions
- Task 2: Calculate EIRP
- Task 3: Calculate a Link Budget

Lab 3: Visualizing Antenna Patterns

- Activity Objective
- Required Resources
- Task 1: Open the FSPL File in Ekahau Pro
- Task 2: Use Various 2.4 Antenna and Observe the Change in RF Coverage
- Closing the Lab

Lab 4: 802.11 Basics

- Activity Objective
- Task 1: Analyze Wireless Frames
- Task 2: Closing the Lab

Lab 5: Initialize an Autonomous WLAN Deployment

- Activity Objective
- Task 1: Configure an Autonomous AP via CLI
- Task 2: Configure Your Standalone AP from the GUI
- Task 3: Closing the Lab

Lab 6: Configuring the WLC Central Switch WLAN Deployment

- Activity Objective
- Task 1: Retrieving the Access Point's MAC Address
- Task 2: Configuring the C9800 using the WLC Setup Wizard
- Task 3: Configuring an AP MAC Address Authorization Filter on the C9800 Controller.
- Task 4: Configuring the Access Points for a Primary C9800 Controller.
- Task 5: Configuring VLANs on the C9800 Controller.
- Task 6: Lab Close Out Procedures

Lab 7: Configuring Security in a Centralized WLAN Deployment

- Activity Objective
- Task 1: Configuring a WPA2-PSK WLAN
- Task 2: Associate the Client with the C9800 WPA2-PSK WLAN
- Task 3: Configuring a WPA2-802.1X Local EAP WLAN
- Task 4: Configuring a WPA2-802.1X Local EAP WLAN (Cont.)
- Task 5: Associate the Client with the C9800 Local-EAP WLAN
- Task 6: Lab Close Out Procedures
- Task 3: Closing the Lab



Lab 8: Perform Wi-Fi Scanning

- Activity Objective
- Topology
- Task 1: Enable MetaGeek inSSIDer
- Task 2: Review 2.4 GHz Activity
- Task 3: Review 5 GHz Activity
- Task 4: Close the Lab

Lab 9: Perform a Predictive WLAN Design

- Activity Objective
- Task 1: Familiarization with Ekahau Pro
- Task 2: Perform a Basic Predictive WLAN Design using a Single Floor Layout
- Task 3: Closing the Lab

Lab 10: Perform Passive Site Survey

- Activity Objective
- Task 1: Configure AP for Spectrum Expert AP Mode of Operation
- Task 2: Configure Cisco Spectrum Expert – Spectrum Analyzer Software
- Task 3: Closing the Lab

WHY TRAIN WITH SUNSET LEARNING INSTITUTE?

Sunset Learning Institute (SLI) has been an innovative leader in developing and delivering authorized technical training since 1996. Our goal is to help our customers optimize their technology Investments by providing convenient, high quality technical training that our customers can rely on. We empower students to master their desired technologies for their unique environments.

What sets SLI apart is not only our immense selection of trainings options, but our convenient and consistent delivery system. No matter how complex your environment is or where you are located, SLI is sure to have a training solution that you can count on!

Premiere World Class Instruction Team

- All SLI instructors have a four-year technical degree, instructor level certifications and field consulting work experience
- Sunset Learning has won numerous Instructor Excellence and Instructor Quality Distinction awards since 2012

Enhanced Learning Experience

- The goal of our instructors during class is ensure students understand the material, guide them through our labs and encourage questions and interactive discussions.

Convenient and Reliable Training Experience

- You have the option to attend classes live with the instructor, at any of our established training facilities, or from the convenience of your home or office
- All Sunset Learning Institute classes are guaranteed to run – you can count on us to deliver the training you need when you need it!

Outstanding Customer Service

- You will work with a dedicated account manager to suggest the optimal learning path for you and/or your team
- An enthusiastic student services team is available to answer any questions and ensure a quality training experience

Interested in Private Group Training?

[Contact Us](#)