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CERTIFIED WIRELESS NETWORK ADMINISTRATOR (CWNA)

Course Code: 3603

Learn to successfully survey, install, and administer enterprise-class Wi-Fi networks.

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, study guide, and practice test to test your knowledge before taking the exam.

What You'll Learn

- 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

Who Needs to Attend

- 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
- CCNAs

Prerequisites

The CWNA exam has no prerequisites; however, the following are recommended before attempting the CWNA exam:

- Basic knowledge of networking (routers, switches, cabling, etc.)
- Basic knowledge of TCP/IP
- At least 1 year of work experience with wireless LAN technologies

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CLASSROOM LIVE	$3,770 USD	5 Day

Classroom Live 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 Labs

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

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Jun 22 - 26, 2026 | 10:00 AM - 6:00 PM EST

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PRIVATE GROUP TRAINING	5 Day

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Date created: 4/30/2026 7:28:32 AM

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