

## **PROGRAMMA CWNP Certified Wireless Network Administrator (CWNA-108)**

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### **Parts I: Radio Frequency (RF) Technologies**

- Define and explain the basic characteristics of RF and RF behavior
- Apply the basic concepts of RF mathematics and measurement
- Identify RF signal characteristics as they relate to antennas
- Explain and apply the functionality of RF antennas, antenna systems, and accessories available

### **Parts II: WLAN Regulations and Standards**

- Explain the roles of WLAN and networking industry organizations
- Explain and apply the various Physical Layer (PHY) solutions of the IEEE 802.11-2016 standard as amended including supported channel widths, spatial streams, data rates
- Understand spread spectrum technologies, Modulation and Coding Schemes (MCS)
- Identify and apply 802.11 WLAN functional concepts
- Describe the OSI model layers affected by the 802.11-2016 standard and amendments
- Identify and comply with regulatory domain requirements and constraints (specifically in 2.4 GHz and 5 GHz)
- Explain basic use case scenarios for 802.11 wireless networks

### **Parts III: WLAN Protocols and Devices**

- Describe the components and functions that make up an 802.11 wireless service set
- Define terminology related to the 802.11 MAC and PHY
- Identify and explain the MAC frame format

- Identify and explain the purpose of the three main 802.11 frame types
- Explain the process used to locate and connect to a WLAN
- Explain 802.11 channel access methods
- Explain 802.11 MAC operations
- Describe features of, select, and install WLAN devices, control, and management systems

#### **Parts IV: WLAN Network Architecture and Design Concepts**

- Describe and implement Power over Ethernet (PoE) 802.3af, 802.3at, 802.3bt
- Define and describe differences, advantages and constraints of the different wireless LAN architectures
- Describe design considerations for common deployment scenarios in wireless such as coverage requirements, roaming considerations, throughput, capacity and security
- Demonstrate awareness of common proprietary features in wireless networks
- Determine and configure required network services supporting the wireless network

#### **Parts V: WLAN Network Security**

- Identify weak security options that should not be used in enterprise WLANs
- Identify and configure effective security mechanisms for enterprise WLANs
- Understand basic concepts of WPA3 and Opportunistic Wireless Encryption (OWE) and enhancements compared to WPA2
- Describe common security options and tools used in wireless networks

## **Parts VI: RF Validation**

- Verify and document that design requirements are met including coverage, throughput, roaming, and connectivity with a post-implementation validation survey
- Locate and identify sources of RF interference
- Perform application testing to validate WLAN performance
- Understand and use the basic features of validation tools

## **Parts VII: WLAN Troubleshooting**

- Describe and apply common troubleshooting tools used in WLANs
- Identify and troubleshoot common wireless issues