ASM Educational Center (ASM) *Est. 1992*

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Authorized CWNA Certified Wireless Network Administrator Boot Camp

Course Outline

Module 1 - Introduction to 802.11 WLANs

- Discuss the standards organizations responsible for shaping the 802.11 Wireless LAN protocol
- Learn how standards compliance is enforced for 802.11 WLAN vendors
- Examine the 802.11 standard and various amendments
- Discuss additional networking standards that are commonly used to enhance 802.11 WLANs

Module 2 - Radio Frequency Fundamentals

- Physical aspects of RF propagation
- Types of losses and attenuation that affect RF communications
- Types of modulation used for wireless communications
- How channels and bandwidth are related to each other in wireless networks
- Three types of Spread Spectrum used in wireless networking

Module 3 - RF Math and System Operating Margin

- RF units of measure
- Basic RF mathematics
- RF signal measurements
- Understand link budgets
- Define and calculate System Operating Margin (SOM)

Module 4 - 802.11 Service Sets

- Explain three types of service sets defined for use within 802.11 WLANs
- Roaming within a WLAN
- Load-balancing as a method to improve congestion in WLANs

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Module 5 - RF Power Output Regulations

- Understand international, regional, and local RF spectrum management organizations
- Understand RF channels in the unlicensed 2.4 GHz and 5 GHz frequency ranges
- How power output limitations are enforced by the FCC for Point-to-Multipoint (PtMP) and Point-to-Point (PtP) wireless connections

Module 6 - Power over Ethernet

- Recognize the two types of devices used in Power over Ethernet (PoE)
- Recognize the differences between the two types of Power Sourcing Equipment (PSE) Understand the two ways in which power can be delivered using PoE
- Understand the importance of planning to maximize the efficiency of Power over Ethernet

Module 7 - Wireless LAN Operation

- Ad Hoc networks
- Infrastructure networks
- Bridged networks
- Repeater networks
- Mesh networks
- WLAN switched networks
- Enterprise Wireless Gateway networks
- Enterprise Encryption Gateway networks
- Virtual AP networks
- Evolution of WLAN architectures
- WLAN Management

Module 8 - WLAN Security

- Security Policy and Procedures
- Legacy 802.11 Security Components
- 802.11i Security Components
- WPA-Personal
- WPA-Enterprise
- WPA2-Personal
- WPA2-Enterprise
- Baseline Security Practices (SOHO, SMB, Enterprise)

Module 9 - 802.11 Analysis and Troubleshooting

- Introduction to 802.11 Protocol Analysis
- 802.11 Data Frames
- 802.11 Control Frames
- 802.11 Management Frames
- Frame Fragmentation
- Power Saving operations
- Transmission Rates

Module 10 - Coordinating 802.11 Frame Transmissions

- Differences between CSMA/CD and CSMA/CA
- Distributed Coordination Function (DCF)
- Quality of Service in 802.11 WLANS

Module 11 - Antennas

- Antenna characteristics and behaviors

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- Types of antennas commonly used with WLANs
- Advanced antenna systems
- Antenna placement and mounting
- Antenna safety
- Types of antenna cables, connectors, and accessories

Module 12 - Site Surveying

- Understanding the need for a site survey
- Defining business requirements and justification
- Facility analysis
- Interviewing network management and users
- Identifying bandwidth requirements
- Determining contours of RF coverage
- Documenting installation problems
- Locating interference
- Reporting methodology and procedures
- Understanding specifics of each vertical market
- Understanding the customer's network topology
- Creating appropriate documentation during and after the site survey
- Understanding safety hazards
- Using appropriate hardware and software to perform the survey
- Understanding the need for spectrum analysis
- Manual RF site surveys
- Predictive site surveys
- Dense AP deployment

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