The popularity of wireless networks is exploding, and with it, demand for trained wireless IT professionals. In the Wireless Networking course, you'll learn the fundamentals of wireless LANs from a vendor-neutral perspective. Expert instructor Tom Carpenter takes you through radio frequency (RF) technologies, industry standards, site surveys, wireless security issues and much more. At the conclusion of this course you'll be prepared to implement, manage, and troubleshoot wireless networks, and be prepared to pass the CWNA® exam.

Session 1

Section A: Wireless Networking Certification
· Overview
· Exam Prerequisites
· Who Should Become Certified?
· Exam Preparation
Section B: What is Wireless Technology?
· Wireless Devices
· Necessity of Wires
· Wireless Benefits
· Wireless Problems
Section C: Wireless History and Standards
· Wireless History
· Recent Milestones
· Regulations and Standards
Section D: Three Major Roles of Wireless LANs
· Access Role
· Distribution Role
· Core Role
· Role Decisions
Section E: Uses of Wireless Technology
· Mobility in Corporations
· Education
· Health Care
· Network Extension
· Building-to-Building
· Last Mile Delivery
· External Mobility
· Small / Home Offices
· Mobile Offices
· Metropolitan Area Wireless
· Public Hotspots
Section F: Wireless Acronyms
· Wireless Terminology
· FCC
· IEEE
· Wi-Fi Alliance
Section G: Working Groups
· 802.11 Standards
· 802.15 and 802.16 Standards
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· Understanding RF
· Wave Attributes
· Sending Data
· RF Analogies
· Polarization
Section I: Radio Frequency Behaviors
· Gain
· Reflection
· Refraction
· Diffraction

· Scattering
· Absorption
· Dealing with RF Behavior
· Understanding VSWR
· VSWR Measurements

Session 2

Section A: Radio Frequency Functionality
· Intentional Radiator
· Understanding EIRP
· Configuring Antenna Power
· Understanding Modulation
· Encoding vs. Modulation
Section B: Understanding Radio Frequency Math
· Importance of Power Calculation
· Understanding Watts
· Understanding Milliwatts
· Understanding Decibels
· Calculation Samples
Section C: Calculating Radio Frequency Power
· Normalizing the Decibel
· Decibel Charts
· Isotropic Radiator
· Calculating Antenna Gain
· Measuring Signal Strength
· RSSI
Section D: Antenna Types
· Principles
· Omnidirectional
· Semi-directional
· Highly Directional
· Sectorized and Phased Array
Section E: Choosing the Right Antenna
· Azimuth and Elevation Charts
· Antenna Gain
· Line of Sight
· Fresnel Zone
· Earth Bulge
· Free Space Path Loss
· Link Budget / SOM
Section F: Antenna Installation
· Placement
· Mounting
· Appropriate Use
· Orientation and Alignment
· Safety
· Maintenance
Section G: FCC Regulations
· Overview
· Connectors
· Antenna Choice
· Smart Antennas
Section H: Antenna Accessories
· Amplifiers
· Attenuators
· Grounding Rods / Wires
· Lightning Arrestors
· RF Cables
· RF Connectors

· RF Signal Splitters
· RF Pigtails and Frequency Converters

Session 3

Section A: Spreading Spread Spectrum
· Overview
· Benefits of Spread Spectrum
· FCC Specifications
· Understanding FHSS
· Understanding DSSS
· Comparing FHSS and DSSS
· Understanding OFDM
· Comparing Systems
· Understanding Bands
Section B: Understanding Access Points
· Acquiring Hardware
· Access Points
· Access Point Modes
· Access Point Options
· SOHO / Enterprise Features
Section C: Configuring Access Points
· Configuring Cisco 1200 Access Points
· Configuring D-Link Access Points
Section D: Wireless Routers, Bridges, and Switches
· Wireless LAN Routers
· Wireless LAN Bridges
· Aligning LAN Bridges
· Wireless Workgroup Bridges
· Wireless Residential Gateways
· Wireless LAN Switches
Section E: Enterprise Devices
· Understanding PoE
· Enterprise Wireless Gateways
· Enterprise Encryption Gateways
· Wireless LAN Mesh Routers
Section F: Wireless LAN Client Devices
· PCMCIA and Compact Flash Cards
· Ethernet and Serial Converters
· USB Devices
· PCI and Mini-PCI Cards
· Common Options
· Demonstrating Hardware
· Using Client Utilities
Section G: Wireless LAN Service Sets
· IBSS / Ad-Hoc Mode Network
· BSS / Infrastructure Mode
· ESS
Section H: Network Connectivity
· Locating a Wireless LAN
· Passive Scanning
· Active Scanning
· 802.11 State Machine
· Power Saving Mode
· Roaming

Session 4

Section A: 802.11 MAC and PHY Layers
· OSI and 802.11
· Frame Types
· Frame Transmission

· DCF and PCF
· The PCF Process
· Understanding QoS
Section B: Communication Processes
· Understanding RTS / CTS
· Configuring RTS / CTS
· CTS-to-Self and Fragmentation
· Dynamic Rate Selection
Section C: Vulnerabilities and Attacks
· Attack Methods
· Types of Attackers
Section D: Security Policies
· Importance of Security
· General Security Policy
· Functional Security Policy
· Recommendations
Section E: Network Authentication and Association
· Authentication
· Open System
· Shared Key
· Configuring WEP Key
Section F: Security Technologies
· Configuring SSID
· Configuring MAC Filters
Section G: Advanced Security Technologies
· Understanding TKIP
· 802.1x/EAP Framework
· WPA, WPA2, and 802.11i
· VPN Solutions
· Application Layer Security
· Portals and Firewalls
· Rogue Access Points
· WIDS

Session 5

Section A: Troubleshooting Wireless Networks
· Multipath
· Hidden Nodes
· Near / Far Stations
· RF Interference
· Narrowband / All-Band Interference
· Weather Interference
Section B: Wireless Design
· Design Steps
· Importance of Site Surveys
Section C: Site Survey Preparation
· Preparation Analysis
· Preparation Checklist
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· Overview
· Equipment Checklist
Section E: Site Survey Technical and Reporting
· Technical Focus
· Reporting Procedures
Section F: Manual Site Surveys
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· Important Questions
· RF Info Gathering

Section G: Automated Site Surveys
· Tools
· Post-Install