



TOIT TRAINING LLC

Certified Wireless Network Administrator (CWNA) Series!

Overview:

This CWNA – Certified Wireless Network Administrator course covers the functions and features of a Certified Wireless Network Administrator within a organization. Students will learn the fundamentals of RF signal and antenna concepts, components and measurements of RF as well as WLAN topologies. They will then learn about Wi-Fi access, IEEE 802.11, MAC architecture and WLAN architecture, troubleshooting and security, types of wireless attacks. They will also learn how to navigate site survey tools, high throughput (HT), PoE, BYOD and more.

The CWNA certification is the foundation level enterprise Wi-Fi certification for the CWNP Program. CWNA certification will get you started in your wireless career by ensuring you have the skills to successfully survey, install, and administer enterprise Wi-Fi networks. As the market and usage of wireless increases, the demand for this certification will increase. The CWNA is also required for your CWSP, CWAP, CWDP and CWNE certifications.

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Course Modules:

Module 01 – Overview of Wireless Communications

(Duration: 39m)

1. Workbook (Pdf)
2. Overview of Wireless Communications
3. Overview of Wireless History
4. Standards
5. The FCC
6. ITU-R
7. IETF
8. ISOC Hierarchy
9. Wi-Fi Alliance
10. IEEE
11. The Hierarchical Model
12. Carrier Signals
13. Communication Fundamentals
14. Module 01 Review
15. **Review Quiz (Number of attempts allowed: Unlimited)**

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Module 02 – Fundamentals of RF

(Duration: 40m)

1. Workbook (Pdf)
2. Fundamentals of RF
3. What is an RF Signal?
4. Characteristics of RF
5. Wavelength
6. Frequency
7. Amplitude
8. Phase
9. RF Behaviors
10. Absorption
11. Reflection
12. Scattering
13. Refraction
14. Diffraction
15. Attenuation
16. Multipath
17. Gain
18. Module 02 Review
19. Review Quiz **(Number of attempts allowed: Unlimited)**

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Module 03- Components and Measurements of RF

(Duration: 1h 04m)

1. Workbook (Pdf)
2. Components and Measurements of RF
3. Components of RF Communications
4. Transmitter
5. Antenna
6. Receiver
7. Intentional Radiator (IR)
8. Equivalent Isotropically Radiated Power (EIRP)
9. Units of Power and Comparison
10. Units of Power
11. Watt
12. Decibel (dB)
13. dB Mathematics
14. dBi
15. dBd
16. dBm
17. The 6 dB Rule
18. RF Mathematics
19. Rule of 10s and 3s
20. Math Examples (eNotes)
21. Noise Floor
22. SNR

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- 23. Received Signal Strength Indicator (RSSI)
- 24. RSSI Example
- 25. Module 03 Review
- 26. **Review Quiz (Number of attempts allowed: Unlimited)**

Module 04- RF Signal and Antenna Concepts

(Duration: 38m)

- 1. Workbook (Pdf)
- 2. RF Signal and Antenna Concepts
- 3. Azimuth and Elevation Charts (Antenna Radiation Envelopes)
- 4. Beamwidth
- 5. Antenna Types
- 6. Omnidirectional Antenna
- 7. Semidirectional Antenna
- 8. Patch Antenna
- 9. Planar Antenna
- 10. Yagi Antenna
- 11. Highly Directional Antenna
- 12. Antenna Arrays
- 13. Beamforming
- 14. Static Beamforming
- 15. Dynamic Beamforming
- 16. Transmit Beamforming
- 17. Antenna Polarization
- 18. Antenna Diversity
- 19. Multiple
- 20. -Input, Multiple

- 21. -Output
- 22. Module 04 Review
- 23. Review Quiz (**Number of attempts allowed: Unlimited**)

Module 05 – IEEE 802.11

(Duration: 25m)

- 1. Workbook (Pdf)
- 2. IEEE 802.11
- 3. Original IEEE 802.11 Standard
- 4. IEEE 802.11
- 5. -2007 Ratified Amendments
- 6. 802.11b
- 7. 802.11a
- 8. 802.11g
- 9. 802.11 Review
- 10. 802.11i
- 11. 802.11r
- 12. -2008
- 13. 802.11w
- 14. 802.11n
- 15. 802.11ac
- 16. Module 05 Review
- 17. **Review Quiz (Number of attempts allowed: Unlimited)**

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Module 06 – Spread Spectrum Technologies

(Duration: 42m)

1. Workbook (Pdf)
2. Spread Spectrum Technologies
3. Industrial, Scientific, and Medical Bands
4. 900 MHz
5. 2.4 GHz
6. 5.0 GHz
7. Unlicensed National Information Infrastructure Bands U-NII Review
8. 60 GHz
9. Narrowband and Spread Spectrum
10. Multipath Interference
11. Frequency Hopping Spread Spectrum
12. Hopping Sequence
13. Dwell Time
14. Hop Time
15. Direct Sequence Spread Spectrum
16. Orthogonal Frequency Division Multiplexing
17. 2.4 GHz (Cont.)
18. 5.0 GHz (Cont.)
19. Adjacent, Nonadjacent, and Overlapping Channels
20. Throughput vs. Bandwidth
21. Module 06 Review
22. w
23. Review Quiz **(Number of attempts allowed: Unlimited)**

Module 07 -WLAN Topologies

(Duration: 33m)

1. Workbook (Pdf)
2. WLAN Topologies
3. Wireless Networking Topologies
4. Wireless Wide Area Network (WWAN)
5. Wireless Metropolitan Area Network (WMAN)
6. Wireless Personal Area Network (WPAN)
7. Wireless Local Area Network (WLAN)
8. 802.11 Topologies
9. Access Points
10. Distribution Service
11. SSID
12. BSS
13. ESS
14. Roaming
15. Mesh BSS
16. WLC Roaming (eNotes)
17. Access Point Modes
18. Client Station Modes
19. Module 07 Review
20. **Review Quiz (Number of attempts allowed: Unlimited)**



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Module 08 – Wi-Fi Access

(Duration: 27m)

1. Workbook (Pdf)
2. Wi-Fi Access
3. CSMA/CA vs. CSMA/CD
4. CSMA/CD (eNotes)
5. CSMA/CA
6. CSMA/CA (eNotes)
7. Distributed Coordination Function
8. Interframe Space (IFS)
9. SIFS/DIFS
10. Carrier Sense
11. Point Coordination Function (PCF)
12. Block Acknowledgment
13. Airtime Fairness
14. Module 08 Review
15. Review Quiz **(Number of attempts allowed: Unlimited)**

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Module 09 – MAC Architecture

(Duration: 29m)

1. Workbook (Pdf)
2. MAC Architecture
3. Packets, Frames, and Bits (eNotes)
4. Data
5. -Link Layer
6. MAC
7. Ethernet Connectivity
8. Frame Information
9. Management Frames
10. Control Frames
11. Data Frame Subtypes
12. Beacon Frames
13. Beacon Frame Types
14. Passive Scanning
15. Active Scanning
16. Authentication
17. Open System Authentication
18. WEP Authentication
19. Association
20. Module 09 Review
21. **Review Quiz (Number of attempts allowed: Unlimited)**

Module 10 – WLAN Architecture

(Duration: 29m)

1. Workbook (Pdf)
2. WLAN Architecture
3. Management, Control, and Data Planes
4. Management Plane
5. WLC (eNotes)
6. Control Plane
7. Data Plane
8. Autonomous WLAN Architecture
9. Centralized Network Management Systems
10. Cloud Networking
11. Centralized WLAN Architecture
12. WLAN Controller
13. WLC Options
14. Split MAC
15. Controller Data Forwarding Models
16. Module 10 Review
17. Review Quiz (**Number of attempts allowed: Unlimited**)

Module 11 – WLAN Deployment

(Duration: 23m)

1. Workbook (Pdf)
2. WLAN Deployment
3. Deployment Considerations for Commonly Supported WLAN Applications and Devices
4. Real-Time Location Services
5. Mobile Devices
6. Corporate Data Access and End-User Mobility
7. Network Extension to Remote Areas
8. Wireless ISP: Last-Mile Data Delivery
9. SOHO
10. ROBO
11. Educational/Classroom Use
12. Health Care
13. Hotspots
14. Fixed Mobile Convergence
15. Module 11 Review
16. **Review Quiz (Number of attempts allowed: Unlimited)**

Module 12 – Troubleshooting

(Duration:53m)

1. Workbook (Pdf)
2. Troubleshooting
3. Layer 2 Retransmissions
4. RF Interference
5. 802.11 Coverage Considerations
6. Capacity vs. Coverage
7. Voice vs. Data
8. Performance
9. Weather
10. Module 12 Review
11. Review Quiz **(Number of attempts allowed: Unlimited)**

Module 13 – Security

(Duration: 46m)

1. Workbook (Pdf)
2. Security
3. 802.11 Security Basics

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4. Robust Security
5. Module 13 Review
6. **Review Quiz (Number of attempts allowed: Unlimited)**

Module 14 – Types of Wireless Attacks

(Duration: 38m)

1. Workbook (Pdf)
2. Types of Wireless Attacks
3. Wireless Attacks
4. Intrusion Monitoring
5. Wireless Security Policy
6. Highly Recommended Wireless Security Policies
7. Module 14 Review
8. **Review Quiz (Number of attempts allowed: Unlimited)**

Module 15 -Fundamentals of Site Surveys

(Duration: 16m)

1. Workbook (Pdf)
2. Fundamentals of Site Surveys

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3. WLAN Site Survey Interview
4. Documents and Reports
5. Module 15 Review
6. **Review Quiz (Number of attempts allowed: Unlimited)**

Module 16 – Site Survey Tools

(Duration: 20m)

1. Workbook (Pdf)
2. Site Survey Tools
3. Protocol and Spectrum Analysis
4. Spectrum Analysis
5. Site Survey
6. AP Placement and Configuration
7. Application Analysis
8. Indoor Site Survey Tools
9. Outdoor Site Survey Tools
10. Coverage
11. Confirmation
12. Module 16 Review
13. Review Quiz **(Number of attempts allowed: Unlimited)**

Module 17 – PoE

(Duration: 18m)

1. Workbook (Pdf)
2. PoE
3. Non
4. -Standard
5. 802.3af
6. Powered Device
7. Discovery
8. Endpoint
9. Midspan
10. MDI
11. PoE
12. Module 17 Review
13. **Review Quiz (Number of attempts allowed: Unlimited)**

Module 18 -High Throughput (HT)

(Duration: 23m)

1. Workbook (Pdf)

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2. High Throughput (HT)
3. 802.11n
4. -2009 Amendment
5. Wi
6. -Fi Alliance Certification
7. MIMO
8. Spatial Multiplexing (SM)
9. MIMO Diversity
10. Space
11. -Time Block Coding (STBC)
12. Cyclic Shift Diversity (CSD)
13. Transmit Beamforming (TxBF)
14. 20 MHz Non
15. -HT and HT Channels
16. 40 MHz Channels
17. Module 18 Review
18. Review Quiz (**Number of attempts allowed: Unlimited**)

Module 19 – Very High Throughput (VHT)

(Duration: 18m)

1. Workbook (Pdf)
2. Very High Throughput (VHT)
3. 802.11ac
4. Module 19 Review

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5. Review Quiz (Number of attempts allowed: Unlimited)

Module 20 -BYOD

(Duration: 29m)

1. Workbook (Pdf)
2. BYOD
3. Mobile Device Management
4. Company-Issued Devices vs. Personal Devices
5. MDM Profiles
6. MDM Agent Software
7. Over the Air Management
8. Guest WLAN
9. Guest Isolation
10. Guest Registration
11. Module 20 Review
12. Course Closure
13. Review Quiz (**Number of attempts allowed: Unlimited**)

This course includes

- about 10.55 hours on-demand video
- 20 downloadable Pdf Workbooks
- Unlimited time access (During Membership)
- Access on mobile and Desktop
- Certificate of Completion