

Course ID
WIRELESS
Course Duration
5 days

Course Title
Wireless Technologies: A Comprehensive Overview

Related Courses

- Emerging Wireless Technologies (EWT, 5 days)
- State-of-the-art of Wireless Communications for Non-engineering Professionals, Managers, and Executives (WIRELESS-EXEC, 2-4 days)
- History, State-of-the-art, and Future of Wireless: Wireless Technology and Applications for Businessmen (WIRELESS-BIZ, 3-5 days)
- LTE/4G: The Next Generation Mobile Networks (LTE-4G, 2 days)
- WiMAX: Technology, Business, and Competitive Landscape (WIMAX-BIZ, 2 days)
- State-of-the-art of WiFi for Non-engineering Professionals, Managers, and Executives (WIFI, 1 day)
- State-of-the-art of Satellite Communications for Non-engineering Professionals, Managers, and Executives (SATCOM-EXEC, 1 day)
- State-of-the-art of VoIP Technology for Professionals, Managers, and Executives (VOIP-EXEC, 1 day)
- GSM: A Technology Overview (GSM-B, 1 day)
- iDEN™: A Technology Overview (IDEN-O, 1 day)
- Wireless Network Structure, Operation, and Technologies (WIRELESSNET, 3 days)
- Wireless Technologies: A Comparative Study (COMPARISON, 2-4 days)
- Introduction to Solution Framework (NGOSS) using Business Process Framework (eTOM), Information Framework (SID), and Application Framework (TAM) (NGOSS1, 3-4 days)

Aimed At Managers and professionals in OSS/BSS, enterprise wireless, and others whose job requires an overview of major contemporary and emerging wireless technologies.

Group Size 5-25

Prerequisites There are no prerequisites, but a degree of ease with technology-related issues and some prior exposure to wireless technologies will be helpful.

**Course
in a Nutshell**

This five-day course presents a comprehensive overview of the major contemporary and emerging wireless telecommunications technologies from the perspective not of a wireless network engineer but that of someone engaged in supporting or using wireless networks. The course can be taught at the required degree of technicality, ranging from nontechnical to very technical.

Starting with the basics of wireless networks, it covers GSM, GPRS, EDGE, UMTS, LTE, and WiMAX. Also discussed are the key interfaces, Signaling System (SS7), and the applications of wireless. The course can be customized to include the technologies of interest to a particular audience.

Customize It!

This course can be customized to your group by including or excluding technologies as dictated by your own needs and by varying the “tech level” to suit the backgrounds of your group.

Learn How To

- Learn the key cellular communications concepts that underlie all wireless networks
- Describe the GSM system architecture
- Describe the major interfaces
- Describe SS7 including layers 1-3 and SCCP
- Describe the operation of GSM, GPRS, EDGE, and UMTS
- Describe WiMAX and LTE
- List and describe the major mobile applications

**Course
Outline**

- GSM System Architecture
 - BSS subsystem
 - NSS subsystem
 - HLR/VLR databases: Subscriber services
- Wireless Concepts
 - GSM frequency bands
 - Channel concepts
 - Cell planning principles
- Interfaces
 - PCM transmission medium
 - Um interface description (bursts, frames, Multiframes)
 - Abis interface
 - A-Ater interface
- Signaling: SS#7
 - Layer 1 (MTP-1)
 - Layer 2 (MTP-2)
 - Layer 3 (MTP-3)
 - SCCP

- GSM idle mode
 - Cell selection
 - Cell reselection
 - Paging
 - BCCH system info
 - IMSI attach/detach
 - Location update normal/periodical
 - Roaming
- GSM Busy Mode
 - Traffic Cases: PSTN-PLMN call, PLMN-PLMN call, international call
 - Handovers: Intra BSC handover, interBSC handover, inter MSC handover
 - GSM radio features
- GPRS System Architecture Overview
 - Introduction to GPRS principles
 - GPRS requirements on GSM BSS
 - GPRS node elements
- GPRS Interfaces
 - Um interface
 - Gb Interface
 - Gs Interface
 - Gn interface
 - TCP/IP packet transmission
- GPRS Idle Mode
 - GPRS cell selection
 - GPRS cell reselection
 - Paging
 - MPDCH format
 - GPRS attach
- GPRS Connected Mode
 - PDP context activation
 - GPRS packet data transmission
 - GPRS cell change
- GPRS/EDGE Solution
 - 8QPSK vs GMSK modulation
 - MCS: Modulation Coding Schemes
 - Supported data rates
 - EDGE firmware requirements
- UMTS Overview
 - History of UMTS evolution
 - WCDMA air interface details

- LTE Overview
 - EPS: An overview
 - LTE air interface
 - OFDM principles: FDD and TDD
 - MIMO for enhanced data rates
 - EPC core network architecture
- WiMAX Overview
 - Capabilities of WiMAX
 - IEEE 802.16 standards
 - WiMAX Forum and WiMAX standards
 - WiMAX technology basics
- Mobile Applications
 - SMS principle
 - MMS principle
 - VoIP solutions
 - MBMS over WCDMA/LTE
 - Mobile email
- Wrap-up: Recap, Q/A, and Evaluations

How You Will Learn

- An experienced wireless expert and instructor, well versed in a variety of technologies, will present this course in interactive lecture format.
- Along with the lecture, we will use exercises, case studies, and interesting group activities to enrich the instruction and drive home the key points.
- If you already know something about wireless, we will build on that knowledge.
- If your background is less technical, we will use interesting and appropriate examples and analogies to simplify the complex subject matter.
- You will receive a printed Participant Handbook which will help you remember and retain what you learned in class and apply it on your job.

Revised

Dec 15, 2009