



## ExperTech 2.0: Wireless Communications

### PROGRAM OVERVIEW

The ExperTech 2.0 series is a library of CD-ROM or intranet-based products covering key communications topics. Seminar style presentations provide telecom professionals with easy access to the information they need. Topics are presented by Hill Associates instructors renowned for their technical expertise, industry experience, and outstanding presentation style.

Wireless communications plays a significant role in local, metropolitan, and wide area networking. Although wireless telephony service has been around since the 1980s, with over 3 billion users worldwide, there is still much confusion in the marketplace about its terms and technologies.

This course addresses radio waves, antenna operation, and issues surrounding line of sight and interference; the architecture of cellular radio and the techniques used for demand assigned multiple access (e.g., FDMA, TDMA, CDMA, and OFDMA); wireless LAN, MAN, and WAN systems; and 3G mobile telephony.

*Wireless Communications* runs 3.5 hours and includes audio, interactive elements, review slides, section knowledge checks, and a final exam. The participant can expect to spend about twice this amount of time to complete the course.

This program has six primary objectives:

- Describe the attributes of radio waves, and explain the operation of a radio antenna, discussing the relationship between line of sight and interference
- Describe the basics of cellular radio, including the assignment of radio channels to users
- Discuss the operation of FDMA, TDMA, CDMA, and orthogonal frequency division multiplexing (OFDM)
- Describe wireless LAN operations, and explain how the deployment and performance of wireless LANs are related
- Describe Wireless WANs and WiMAX and their applications
- Discuss the three generations of mobile telephony, and describe the evolutionary process of moving to 3G mobile telephony

Specific topics can be developed, or packaged together to create a unique and customizable curriculum. All of our standard titles are available for preview at our store ([www.hill.com/store](http://www.hill.com/store)).

### About Hill Associates

At Hill Associates, we excel at creating custom talent development programs. Our experts help identify and assess your needs, and create training and educational programs that exactly meet those needs. Though we specialize in information technology, we've strengthened companies and organizations in a wide range of industries for over 25 years. Let us help you create a world-class talent development program that moves your business forward.

### PROGRAM OUTLINE

#### Lesson 1: Radio Wave Behavior

- Radio channel definitions
- Attenuation and interference

#### Lesson 2: Antenna Systems

- Conventional and smart antenna systems
- Relative power and MIMO

#### Lesson 3: Line of Sight and Interference

- Fresnel zone
- Coverage, capacity, and quality

#### Lesson 4: Cellular Radio

- Cellular radio infrastructure
- Frequency reuse, cell sectors

#### Lesson 5: Demand Assigned Multiple Access

- Frequency vs. time division duplex
- FDMA, TDMA, and CDMA

#### Lesson 6: Orthogonal Frequency Division Multiplexing

- Subcarrier definition
- OFDM access / transceivers

#### Lesson 7: Wireless LANs

- Wireless LAN architectures
- The 802.11 family (a, b, g, n)

#### Lesson 8: Wireless LAN Deployment

- Site surveys and performance
- Mesh networks

#### Lesson 9: Wireless MANs

- The 802.16 family
- WiMAX applications / services
- Technology updates

#### Lesson 10: Mobile Telephony

- The paths to cdma2000 and UMTS
- IP Multimedia Subsystem (IMS)