

Course ID

GSM-A

Course Duration

2 days

Related Courses

Course Title

GSM: Optimization and Advanced Features

- iDEN™: Network Architecture, Operation, and Design (IDEN, 4 days)
- Direct Sequence Spread Spectrum Techniques and CDMA-based Technologies (CDMA, 2 days)
- cdmaOne/IS95 (IS95, 2 days)
- UMTS-FDD: Network Architecture, Operation, and Design (UMTS-FDD, 3 days)
- UMTS-TDD: Network Architecture, Operation, and Design (UMTS-TDD, 2 days)
- HSDPA: Network Architecture, Operation, and Design (HSDPA, 2 days)
- 1xRTT: Network Architecture, Operation, and Design (1XRTT, 2 days)
- 1xEVDO: Network Architecture, Operation, and Design (EVDO, 2 days)

Aimed At

Experienced GSM engineers who wish to study the advanced functionality of GSM. The standard presentation of this course assumes a bachelor of science in Electrical Engineering, Mathematics, Physics, or a related subject along with an appropriate background in communications engineering.

Group Size

5-25

Prerequisites

- GSM: Network Architecture, Operation, and Design (GSM-I, 5 days)
- Knowledge of the wireless network structure and operation, RF propagation and fading issues, and link budget analysis.
- At least two years experience in the design and optimization of a wireless network using any major technology.

Course In a Nutshell

GSM is a mature technology rich in features, capabilities, and options intended to solve a host of specific problems. This course, third in our series of courses on GSM, examines these advanced features and offers practical strategies for exploiting them to optimize GSM networks.

While the ‘standard features’ of GSM are indeed quite powerful, a superb technology, such as GSM, offers options and capabilities that go beyond the “surface” of initial implementations. Having completed this course, you will be able to identify performance problems in a GSM network, existing or potential, and use GSM’s advanced functionality to help resolve them. Armed with the knowledge of GSM’s ‘power features’, you will be able to achieve more optimum network operation including better voice quality and greater capacity.

Customize It!

Customize this course to your specific needs at little-to-no additional cost. We offer distinct versions of this course tailored for audiences such as:

- Network design and optimization engineers
- Equipment or application designers

- Less technical audiences such as managers, executives, business planners, sales and marketing specialists, and operations and support personnel

Combine this course with its natural prequel, GSM: Network Architecture, Operation, and Design (GSM-I, 5 days). Ask us about the “combo discount”.

Course Outline

- GSM Framing Structure Review and Key Observations
 - The 26-frame multiframe
 - The 51-frame multiframe
- Combining the SDCCH with the CCCH
 - Pros and cons of alternative structures on the 51-frame multiframe
 - Paging channel capacity, paging channel subchannelization, and extended paging channel capabilities
 - RACH capacity, stability, and capacity enhancement mechanisms
 - CCCH optimization mechanisms
- Parameters and Algorithms Controlling the GSM Radio Subsystem
 - Cell selection
 - Cell reselection
 - Location area updates and registrations
 - Handover execution
 - Network-wide performance optimization considerations and tradeoffs
- Measurement Processing and Handover Considerations
 - Measurements: How, when, and where
 - Measurement processing Information Elements (IE) and their functionality
 - Measurement processing rules and options available to vendors, operators, and network designers
 - Optimization of neighbor lists
 - Network synchronization issues, options, and corresponding performance issues and optimization
- Optimization Using Phase 2+ Capabilities
 - AMR
 - Frequency hopping issues and parameters
 - Smart antennas
 - Dual band operational and optimization-related issues
- Course Recap and Conclusion

How You Will Learn

- You will learn in interactive lecture format from an instructor who's among the most knowledgeable and dynamic in the industry.
- Along with lecture, we use exercises, puzzles, case studies, and interesting group activities to enrich the instruction and drive home the essential points.
- If you already know something about the technology, we will build on that.

We'll compare and contrast what's familiar with what's new, making new ideas easier to learn as well as more relevant.

- If your background is less technical, we will use meaningful and ingenious examples and analogies to simplify the complex subject matter.
- The Participant Handbook will provide you with a structure to which you can add the information and insight provided in real-time, turning it into a valuable reference resource you can take back to your job.

Revised

May 8, 2006