

Course ID  
**UMTS-TDD**  
Course Duration  
**2 days**

Course Title  
**UMTS-TDD: Network Architecture, Operation, and Design**

**Related Courses**

- 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)
- Traffic Engineering Models for 3G Network Design (TRAFFIC3G, 2 days)
- IP-Based Systems: TCP/IP and Mobile IP (IPSYS, 2 days)
- Multimedia Applications: IMS, SIP, and VoIP (MULTIMEDIA, 2 days)
- GSM: Network Architecture, Operation, and Design (GSM-I, 5 days)

**Aimed At**

Those with some UMTS-FDD background who wish to learn more about UMTS-TDD. 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**

- Direct Sequence Spread Spectrum: Techniques and CDMA-based Technologies (CDMA, 2 days)
- UMTS-FDD: Network Architecture, Operation, and Design (UMTS-FDD, 2 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**

As the implementation of UMTS gathers momentum worldwide, there's increasing interest in the TDD mode of UMTS. This course addresses the need for a good, strong course on UMTS-TDD.

In this course, you will build on your existing knowledge of UMTS-FDD networks by learning the structures added by TDD. The relationships between the logical channels, transport channels, and physical channels build on the corresponding relationships of the FDD mode, but they do bring in some added complexity, along with the added capabilities. We will discuss how to exploit these capabilities to come up with good network designs, trouble shoot performance problems, and identify solution approaches. This will help you do a better job of designing and optimizing UMTS-TDD networks as well interface more effectively with the equipment vendors.

**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

## **Course Outline**

- Introduction to UMTS with a Review of the Key FDD Mode Concepts
  - UMTS releases and associated features: An Overview
  - UMTS network architecture
  - UMTS radio technology overview: UMTS Terrestrial Radio Access (UTRA) and what's new in the TDD mode
  - Review of the spread spectrum techniques as applied to UTRA
  - Review of the concepts of physical channels, transport channels, and logical channels
- UMTS-TDD Channelization Concepts and Implementation
  - UMTS physical channels: Definition, properties, and usage; what's new in TDD
  - UMTS transport channels: Definition, properties, and usage; what's new in TDD
  - UMTS logical channels: Definition, properties, and usage: What's new in TDD
  - Mapping of logical channels to transport channels: What's new in TDD
  - Mapping transport channels to physical channels: What's new in TDD
  - TDD slot structures and associated degrees of freedom (and complexity)
- UMTS-TDD Spreading and Modulation Specifics
  - Specifics of spreading in the dedicated channel in the TDD mode
  - Overview of spreading in other channels in the TDD mode
- 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*

*June 4, 2006*