

## UMTS Technology

“UMTS Technology” course is an intermediate technical course, which covers all aspects of architecture and functionality of third generation cellular networks – UMTS. It presents the knowledge useful for everyone interested in 3G systems.

### Target audience

The course is intended for technical GSM/GPRS staff and their management who plan to or already work on introducing UMTS.

### Training contents

- **Introduction**  
(three generations, ITU and IMT-2000, 3GPP and UMTS, 3GPP2 and cdma2000, evolution paths),
- **Network structure**  
(GSM evolution, GSM, GSM/GPRS, 3GPP R99/R3 UMTS, 3GPP R4 UMTS and 3GPP R5 network structure, identity numbers, geographical network structure),
- **WCDMA Wideband Code Division Multiple Access**  
(multiple access, duplex division, 3G radio spectrum, WCDMA, channels, power control, handover, RAKE receiver, micro and macro diversity),
- **UTRAN UMTS Terrestrial Radio Access Network**  
(UTRAN architecture, BTS hardware architecture, packet access, packet scheduling, capacity and coverage considerations, cell breathing, HSDPA & HSUPA),
  - HSPA +  
(Multiple Input Multiple Output (MIMO), Higher Order Modulation (64 QAM DL, 16 QAM UL), HSPA voice support - VoIP over HSPA and CS Voice over HSPA, HSPA multicarrier operation).
- **Core Network**  
(layers, transport layer based on ATM or IP, ATM overview, Voice Telephony over ATM (VToA), IP overview, Voice over IP (VoIP), QoS in IP networks, MPLS overview, SIGTRAN, control layer, signalling protocols, traffic cases),
- **IP Multimedia System – IMS**  
(network architecture, identification, QoS, protocols, IMS discovery, registration, security procedures, mobile-to-mobile call, mobile-to-PSTN call, presence service, push-to-talk over cellular, messaging, white board communication, voice call continuity),
- **UMTS Services**  
(bearer services, QoS classes, QoS parameters, multimedia call, streaming, MExE, USAT, positioning services, CAMEL, OSA, security).

### Prerequisites

The participants should have attended the following courses for better understanding “GSM Technology”, “GPRS/EGPRS Technology” or have the equivalent knowledge on GSM/GPRS.

## Training method

Lectures and theoretical exercises.

## Duration

2 days

## Level

Intermediate