Target Audience
- Network Planning/ Performance Engineering Staff
- System Test / IOT Test Engineers and Optimisation Personnel

Prerequisites
- GSM/EGPRS Overview (GSM2000-01EN)

Learning Objectives
After completing this course, the students will be able to:
- Evaluate features like power control, HO control and UL/DL DTX on speech timeslots.
- Understand how AMR Codec adaptation is performed and when TrFO is possible.
- Analyse the RXLEV and RXQUAL measurements and reasons for handover.
- Know how final ACK is delayed to identify with the global TFI the setup of a new TBF.
- Judge the performance of EGPRS link adaptation & resource allocation.

Course Outline
1. GSM & EGPRS Network Layout
   1.1 Network Overview
   1.2 Functionality of CS/PS CN
   1.3 Functionality of RAN
   1.4 Mobile Station Classes
2. Radio Frequency Planning Fundamentals
   2.1 Frequency Bands & ARFCNs
   2.2 Interference & Frequency Re-Use
   2.3 RF Propagation & Multipath
3. TDMA & FDMA Resources
   3.1 TDMA Frame & Timeslots
   3.2 Physical & Logical Channels
   3.3 CCH, TCH & PDCH Multiframes
   3.4 Need for Timing Advance
4. Physical Layer - Modulation
   4.1 GMSK versus 8-PSK Modulation
   4.2 Bursts – Structure & Timing
   4.3 Training Sequence & ISI
   4.4 Cell Search – FCCH & SCH Decoding
   4.5 RXLEV & RXQUAL Measurement
   4.6 SAIC & VAMOS – MIMO for GSM
5. CS Idle Mode & Connected Mode Procedures
   5.1 Cell Selection & Reselection
   5.2 Random Access – RACH for EGPRS
   5.3 Location Update
   5.4 Call Setup & Release (MTC/MOC)
   5.5 Power Control & DTX (Full/Sub Values)
   5.6 Handover Signalling & HO Types
   5.7 Call Waiting & Multiparty Call
   5.8 AMR Codec Adaptation
   5.9 Inter-RAT HO & Redirections
6. RAN Failure & Drops
   6.1 Downlink Signaling Failure
   6.2 Radio Link Timeout & Layer 2 Drops
   6.3 BSSMAP Clear Request Procedure
   6.4 HO Failure & Drops
7. PS Idle Mode & Connected Mode Procedures
   7.1 Ready & Standby States
   7.2 Cell Reselection & Cell Update
   7.3 Attach & Routing Area Update - NMO
   7.4 CS/PS Paging Coordination
   7.5 PDP Context Activation & Deactivation
   7.6 BVCI & MS Flow Control
   7.7 BSSGP Radio Status Signaling
   7.8 GPRS Detach and Rejects
8. EGPRS Resource Allocation & TBF Handling
   8.1 UL/DL TBF Setup & Concurrent TBF
   8.2 Dynamic UL TBF vs. EDA
   8.3 Normal & Abnormal TBF Release
   8.4 Extended Uplink TBF
   8.5 Delayed Downlink TBF Release
9. RLC/MAC Operation
   9.1 LLC Segmentation & Reassembly
   9.2 Polling for RLC/MAC Ctrl vs. Data Blocks
   9.3 RLC/MAC (E)PDAN & (E)PUAN
   9.4 RLC Window & Stalling
   9.5 ARQ and IR - MCS Family’s
10. EGPRS Mobility
    10.1 Network Control Order & Cell Changes
    10.2 NACC & PCCO
    10.3 Packet SI Status & Serving Cell Data
    10.4 Inter-RAT Cell Changes