

Fundamentals of Mobile Communications(GSM) & SS7 Signaling (3 Days)

- A short history of Mobile Communication
 - Overview of Wireless Telecom systems for 1G to 4G
- Brief on Telecom organizations, Associations and its role
 - TIA, CTO, ITU, IETE ETSI, CTIA
- Basics of Wireless Transmission
 - Signals, Antennas, Signal Propagation
 - Multiplexing, Modulation & Spread Spectrum
- Cellular systems/MAC/ Telecom systems Overview & Switching
 - Freq. Spectrum, Concept of Frequency reuse and Freq. Hopping.
 - SDMA, FDMA, TDMA, TDD, FDD
 - Time Switching, Space Switching and combination
- Introduction to Signaling (in General)
 - R2MFC, SS7 layers
- GSM System Overview
 - Systems Architecture
 - Switching Systems: G/MSC, VLR, HLR, SMSC, Base Station Sub systems
 - Signaling Interfaces
- Digital Radio Transmission
 - TDMA Transmission Problems, Path Loss, Fading
 - Speech Coding, Channel Coding, Interleaving, Hopping, Equalizer & Timing Advance
- Identity of Numbers/Channel concepts & Security
 - MSISDN, IMSI, TMSI, MSRN, LAI, BSSID, SMSCID, SIM Card
 - Radio Freq carrier, Time Slots, TDMA Frames, Logical Channels & Mapping of Channels
 - Authentication, Ciphering, encryption, A3/A8 and A5 algorithms
- Traffic Cases/Analysis & Cell Planning
 - Location Update, Registration, Call to and from MS, International Calls, Handover, SMS services & Pre/Post Paid calls.
 - Basics of Traffic Engineering, Cell Planning
- Introduction to 2G, GPRS, EDGE and 3G (WCDMA)
 - GPRS Architecture, System Overview, GPRS Call Flow, Coding Technique to EDGE

GSM & SS7 SIGNALING

- Overview of 3G (UMTS)
 - Evolution of 3G and Other Systems for 3G
 - Releases,(99, Rel. 4,Rel. 5) and capabilities
 - OSA

- System Overview
 - Core Network Architecture of 3G system
 - Switching Systems, Transmission systems & Media Control

- Signaling Overview
 - Signaling Interfaces and capabilities – SIP, MGCP/ MEGACO, SIGRTAN, RTP/RTSP etc.

- 3G Services/ QoS Management
 - Concepts of Services, Examples, and use cases
 - QoS in IP, specific to users, specific to services, and techniques to manage it.

- Traffic Cases
 - Registration, Call Flow, Multi-forking, Voice Mail systems etc

- 3G Planning and Engineering (Guidelines)
 - Radio and Core

- Release 5 and beyond