Certification & Training on GSM, UMTS Network Planning & Operations
Course Duration (25 Days)

Course Content

Part 1: Introduction Of Telecom (4 Days)
- Introduction
- History of Wireless Communication
- Phases of Network Deployment
    - Planning
    - Installation, Commissioning
    - Configuration
    - Optimization
    - Network Expansions
- Understanding of Basic Terminologies
- Analog and Digital Technologies
    - Sampling
    - Quantization
    - Encoding
- Concept of Modulation
    - Amplitude Modulation
    - Frequency Modulation
    - Phase Modulation
    - GMSK
    - QPSK
- In depth of Multiple Access Technology
    - FDMA
    - TDMA
    - CDMA
- Wireless Generations
- Standard Releases
- Electromagnetic Propagations
- Traffic Theory
- Concept of decibel (dB)

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Part 2: GSM Overview (3 Days)

- GSM History & Phases
- GSM Fundamental
- Standardized GSM Frequency Bands
- GSM Architecture and Elements
  - MS
  - BSS
  - NSS
  - OSS study
- Interfaces
- Identities
- Frequency Re Use Concept
- BSIC

Part 3: GSM Air Interface (3 Days)

- Refreshing FDMA, TDMA
- Channels Classification
  - Logical
  - Physical
- Radio Resource Management (RR)
  - Security and Authentication
  - Encryption/Ciphering
  - TMSI
  - Frame Concept
- Coding
  - Traffic
  - Signaling
- Burst Knowledge
- Diversity Concept
- Link Budget
- LAPDm Signaling
- Connection Management (CM)
- Mobility Management (MM)
- Idle Mode Procedure
  - First Time ON
  - Location Update
  - Paging
  - Cell Reselection

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- Dedicated Mode
    - Mobile Originated Call (MOC)
    - Mobile Terminating Call (MTC)
    - Mobile to PLMN
    - SMS
    - Interference
    - Handover Concept
    - Power Control feature
    - Timing Advance
    - Frequency Hopping
    - Discontinuous Transmission
- Concept of Equalization
- Field Analysis and Optimization
    - Physical Audit
    - Drive Collection
    - Analysis of Field Parameters
    - Troubleshooting of Field Problems
    - Key Parameter Indicators (KPI)
    - Measurement Steps
    - Post Processing of data
    - Report Preparation

Part 4: BSS Domain (1 Day)

- BSS Architecture
- Understanding of BTS
    - Functionality
    - BTS Elements
    - Types of BTS
    - Interface
    - Supporting BTS Elements
- BTS-BSC Connectivity
    - Transmission Knowledge
    - PCM Concept (E1)
    - SDH/PDH/STM Description
    - Abis Interface
    - TRX Mapping
    - Microwave Connectivity
    - LAPD Signaling
    - Antenna
    - Importance of VSWR
    - Concept of ISDN
- Antenna System & passive infra, BTS tools overview

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Part 5: NSS Domain (1 Day)

- Knowledge of NSS
- NSS Elements
    - MSC
    - VLR
    - HLR
    - AuC
    - EIR
    - SMSC
    - TRAU
    - GMSC
    - GGSN
    - SGSN
    - Billing Centre
    - MGW
    - TRAU

Part 6: Transmission Basic & Signalling (1 Day)

- Cellular Transmission Basics
- PDH
- SDH
- Microwave Concept
- Signalling System
- Signalling in GSM
- SS7 Signalling System

Part 7: Beginning of UMTS (10 Days)

- Evaluation of 3G & Advantage
- Standardization
- Route Map
- Quality of Service (QOS)
- UMTS Architecture
- WCDMA Principal
    - WCDMA FDD
    - WCDMA TDD
    - Frequency Band Allocation
    - Spreading
    - Processing gain
- Channelization Code

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- Scrambling code
- Scrambling code planning
- Rake receiving
- RRM Functionalities
  - Load Control
  - Packet Scheduler
  - Admission Control
- Features
  - Power Control
  - Handover Control
- 3G Parameters
- Field Analysis
  - Physical Audit
  - Drive Collection
  - Analysis of Field Parameters
  - Troubleshooting of Field Problems
  - Measurement Steps
  - Post Processing of data
- Report Preparation

Holiday for Test Preparation..............(2 Days)
Drive Testing on Live Network
Course Assessment
Question & Answer
Mock Interview