



## Who Should Attend?

This course is designed for individuals responsible for planning, engineering, operating, and maintaining 2G/3G systems. Practical and theoretical knowledge is valuable for both technical professionals and engineers.

## Course Scope

1. Core Network Planning Overview.
  - Traffic planning — objectives, inputs, activities.
  - Traffic modelling.
  - Theoretical models.
  - CS/PS real-time and non-real-time services.
  - Legacy telephony solutions.
  - IP networks and Internet.
  - Modern telephony - VoIP and Softswitch.
2. Core Network Connectivity.
  - CS architecture.
  - Call setup.
  - Interconnect to other CS CN.
  - International roaming.
  - SIP-ISUP interworking.
  - PS architecture.
  - PDP Context.
  - QoS in PS service.
  - Interconnect to other PS CN.
3. Traffic Parameters.
  - Key CS domain parameters and KPIs.
  - Supplementary CS domain parameters and KPIs.
  - Key PS domain parameters and KPIs.
  - Supplementary PS domain parameters and KPIs.
  - Grade of Service (GoS).
  - Erlang theory.
4. Traffic Modelling.
  - CS/PS services.
  - User profiles and requirements.
  - CS traffic modelling.
  - CS traffic cases.
  - Gi and Gp traffic modeling perspective.
  - PS traffic cases.
  - Expansion planning.
5. Traffic Distribution and Dispersion.
  - Reference network model.
  - Subscriber distribution.
  - Traffic dispersion.



- CS traffic.
- Nb traffic.
- PS traffic.
- 6. CS Capacity Planning.
  - Network planning.
  - Detailed network design.
  - CS network solution - nodal perspective.
  - CS network solution - features.
  - MGW Traffic Model.
  - MGW, MSC, HLR, SMS-SC dimensioning principles.
- 7. PS Capacity Planning.
  - PS network solution.
  - PS network topology design.
  - PS dimensioning considerations.
- 8. Mc Signalling Planning.
  - Signalling load and volume calculation.
  - H248 introduction.
  - H.248/MEGACO protocol.
  - H.248 signalling case and calculations.
  - BICC features impacting H.248 calculations.
- 9. SS7 Signalling Network.
  - SS7/SIGTRAN key concepts.
  - Signalling network design and planning.
  - SCCP and SUA.
  - Classical and broadband transport.
  - M3UA, M2UA, M2PA.
  - SIGTRAN protocols overhead.
  - Signalling link dimensioning for TDM, ATM, and IP.
- 10. SS7 Applications Capacity Planning.
  - ISUP messages, calculations.
  - BICC introduction, calculations.
  - TCAP message exchange.
  - MAP examples.
  - TCAP/MAP calculations.
  - IN architecture.
  - CAMEL CS examples.
  - IN network nodes and link dimensioning.
  - TCAP/INAP-CAP calculations.
- 11. DIAMETER Signalling.
  - DIAMETER Protocol.
  - PCC – features.
  - PDP with policy control.
  - Gx, Rx and Cx interfaces.
  - PDP with flow based charging.
  - Gx, Gy signalling cases, calculations.



## **Course Objectives**

This course is designed to provide core, radio, and transport network engineers with knowledge about core network planning. An introduction to Core Network is provided to justify the need for core network planning in 2G/3G enabled networks.

## **Prerequisites**

Participants must have basic knowledge of 2G/3G core networks. Signalling knowledge of GSM, WCDMA and IP technology is an advantage.

## **Training Structure**

Four-day training divided into logical sessions.

## **Methodology**

Instructor-led training.