INACON GmbH

GPRS
from A – Z

Course Duration:

▸ 2 days

Course Description:

▸ This course addresses the needs of engineers and technicians who need to build up detailed skills about GPRS. In that respect, the course "GPRS from A – Z" goes far beyond the introductory level.

▸ Starting with a short description of genuine GSM, this course provides first an introduction to basic GPRS principles like the service aspects, the network architecture and packet-switched traffic characteristics.

▸ "GPRS from A – Z" explains in detail the operation of the new GPRS radio interface. Then follows an introduction to the GPRS protocol stack and the presentation of the most important GPRS protocol scenarios like GPRS attachment or PDP context activation.

▸ The course concludes with an overview of High Speed Circuit Switched Data (HSCSD) and EDGE as alternatives for GPRS.

As in all our courses we integrated several interactive exercises for a perfect learning experience.

Pre-Requisites:

▸ A thorough understanding of the existing GSM networks, protocols, operation and parameters is required. If necessary, we advise our course "An Introduction to GSM" to be taken upfront.

▸ Previous knowledge of GPRS or other packet-switched systems is favourable but not required.

Course Target:

▸ The student will be enabled to understand all aspects of GPRS operation and procedures. The course "GPRS from A – Z" provides a thorough insight view into all details of GPRS.

Some of your questions that will be answered:

▸ How can the circuit-switched GSM be upgraded to provide for packet-switched services ?

▸ What is the function of the new GPRS network elements like the PCU, the SGSN, the GGSN or the Border Gateway ?

▸ How is the GSM radio interface modified to suit the needs of a packet-switched data transfer service ?

▸ Why does GPRS require new channel types and what are their functions ? Why are some of these channel types like the PBCCH or the PCCCH optional ?

▸ How does GPRS achieve higher throughput rates per timeslot than GSM ?

▸ What is the functions and details of the various new GPRS protocols like RLC/MAC, BSSGP or GTP, to name a few ?

▸ What is the flow of signaling and data transmission scenarios in GPRS ?

▸ Are HSCSD and EDGE really alternatives to GPRS? How do these technologies work and what are the differences between HSCSD or EDGE on one hand and GPRS on the other hand ?

Who should attend this class?

▸ Design Engineers of GPRS network equipment and GPRS mobile stations.

▸ Network Planners who need to build joined GSM / GPRS networks.

▸ Field and test engineers who have to learn GPRS operation and procedures.

▸ Consultants who require a thorough understanding of GPRS

"Best course / seminar I have ever attended." (Conexant)

"An excellent course to learn about GPRS. Lots of interactive examples and exercises provided for an easier understanding." (NOKIA)

Table of Contents:

_____

More Details of GPRS

- **The Coding Schemes CS-1 to CS-4** / Description / Selection Principles / Puncturing / Liabilities / The Meaning of the Stealing Flags

- **Mobility and Session Management in GPRS** / TLLI / P-TMSI / Routing Area (RA) / Function of RA-Update / READY Timer / GMM- and SM-Message Format / Summary

The GPRS Protocol Stack

- **RLC/MAC (Radio Link Control / Medium Access Control)** / Functions / Information Elements / Block Format and Coding

- **LLC (Logical Link Control)** / Function / Acknowledged ⇔ Unacknowledged / Ciphering in GPRS / Message Format and Coding

- **SNDCP (SubNetwork Dependent Convergence Protocol)** / Function / Compression / Message Format and Coding

- **Frame Relay / Network Service and BSSGP (Base Station Subsystem GPRS Protocol)** / Introduction to Frame Relay / Overload Defense / BVCI / Function of NS and BSSGP

- **GTP (GPRS Tunneling Protocol)** / Function / Message Format and Coding

Scenarios in GPRS

- **GPRS Attach on CCCH / PCCCH**

- **Intra-SGSN Routing Area Update**

- **PDP-Context Activation and Packet Data Transfer (Two-Phase Access)** / Mobile Originating

- **Inter-SGSN Cell / Routing Area Update in Active**

Alternative High Speed Data Options

- **HSCSD** / Description / Comparison to GPRS

- **EDGE** / Description / GMSK ⇔ 8PSK / ECSD ⇔ EGPRS / ERAN