



MCNS Training Program

LTE (4G) Overview

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LTE (4G) Overview will offer delegates a good understanding on LTE network evolution, from both radio and core domain

COURSE REVIEW

This LTE (4G) training course introduce audience into LTE technology in a stepwise path. The ultimate need to transform the society into a digital era will make clear to audience the necessity for LTE technology. The **LTE core network** together with the **LTE RAN architectures** will be thoroughly presented, introducing the audience into the detailed descriptions spanning from the spectrum enhancements and channels towards the **MIMO** introduction and carrier aggregation. After this course participants will have a solid understanding of the LTE network from architectures up to all functional modules in both RAN and core domain.

AIMED AT

LTE (4G) Overview is aimed at a technical audience as well as managers and non-technical personnel who want to get some insight overview into **LTE technology**. It is suitable for technical professionals, **RAN operators, Radio planning engineers, technical managers** who currently are or will be involved in LTE network and technology. **Marketing engineers** as well as technical consultants will find this course a good initial step into their career path to pre-sales. Finally **students, researchers** and **technical consultants** into various other fields than mobile technology, will find this course valuable to fill the gap between their expertise (IT technology machine learning and software engineers etc) and the LTE technology

Prerequisites: In order for the attendant to better understand the content of this topic and to gain a further insight into the LTE network description, a general knowledge **radio, RF and wireless** technology might be useful. **In any case course can be customized to offer also introductory terms and descriptions**

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Course Benefits for individuals (Professionals)

- Understand basic principles behind LTE network.
- Evaluate implementation options for LTE and build knowledge of a comprehensive set of technology / deployment scenarios.
- Understand the pre-sales and post-sales marketing and management requirements for **LTE deployment** and **LTE technology**
- Confidence to set expectation and drive internal debate on advanced technology issues, and to better evaluate solutions in terms of commercially viability, reliability, risk and strategy

Course Benefits for your Organization

- Equip organization engineers with the necessary knowledge of LTE
- Develop technology solutions and roadmaps that are better aligned with the expected industry direction and that take account of latest technology developments and initiatives
- A solid foundation on which to build organizational competency development plans to ensure opportunities arising from LTE and **LTE-A** can be maximized.
- **Keep ahead of competitors** in preparing your network for LTE-A and **LTE-Apro**
- Prepare for future network expansions and quality performance optimization

Training Format

Instructor-Led Training
On-Site Classroom: 2 days
Web delivered (Virtual): 2 days
Excellent and descriptive course material (pdf file) will be provided

Customer Tailored!

We can tailor the included topics, tech level, and duration of this course right to your team's technical requirements and needs

Section 1 : LTE Requirements

Course Program Outline

Module 1: LTE Requirements and services

- What is LTE??
- Why we need LTE??
- LTE standards overview
- LTE network architecture
- LTE services
- MBB: Mobile Broadband requirements
- MTC: Machine Type Communication requirements

Module 2: LTE Performance Overview

- 3GPP Systems, Motivation, Industry Groups
- ITU-, NGMN-, 3GPP- View and Timeline
- LTE Scenarios and Use Cases
- LTE Capacity Increase
- Variety of Device Types
- Variety of use services
- Saving Energy and IoT technologies



Section 2: LTE Core Architecture

Course Program Outline

Module 3: LTE core evolution

- LTE core standardization
- Reason behind LTE EPC
- LTE EPC core architecture
- LTE EPC nodes and functions
- LTE EPC interfaces

Module 4: LTE core signaling overview

- LTE EPC signaling overview
- LTE EPC internode signaling
- LTE EPC to RAN signaling
- QoS overview in LTE EPC
- LTE EPC and authentication procedures
- Log file signaling analysis examples



Section 3: LTE RAN Architecture

Course Program Outline

Module 5: LTE RAN evolution

- LTE RAN standardization
- LTE RAN evolution
- Reason Behind LTE-A to LTE-Apro evolution
- LTE RAN overview
- HW Requirements
- LTE RAN Frame structure
- LTE FDD vs. TDD
- LTE RAN frequency domain
- LTE physical channels and signals
- LTE RAN signaling overview
- Log file signaling exercises review

Module 6: LTE MIMO overview

- LTE MIMO principles
- LTE precoder and MIMO schemes
- MIMO capacity enhancements
- MIMO functional principles
- MIMO evolution Rel.8 to Rel.14

Module 7: LTE functional overview

- LTE Scheduler
- LTE Carrier Aggregation
- What is LTE-A and LTE-Apro??
- LTE CoMP
- LTE VoLTE support
- LTE Mobility overview



Section 4 : LTE Special cases

Course Program Outline

Module 8: LTE special deployments

- LTE NB-IoT and Cat-M1
- LTE over satellite
- LTE over Li-Fi (Visible Light Communication – VLC)
- LTE in Fixed Wireless Access (FWA)

