

**Corso di Formazione**Code: **KLA-LTESAE**Duration: **2 days**

Level: ■■■□

## LTE e System Architecture Evolution

**OBJECTIVES**

Acquiring the skills needed for understanding and managing the LTE Access and Evolved Packet Core (EPC) Network. The course analyzes the Long Term Evolution (LTE) technology, network architecture and performance with focus on LTE Evolved Packet Core (EPC) and its interworking with the LTE access network.

**PREREQUISITES**

Good knowledge of UMTS architectures and protocols.

**WHO SHOULD ATTEND**

Technical staff and Engineers involved in developing and managing next generation Mobile Networks.

**CONTENTS****UMTS Evolution and EPS**

- UMTS Evolution from HSPA Rel.6 to Rel.7
- Evolved Packet System (EPS): LTE and System Architecture Evolution (SAE) general Architectures
- Evolved UTRAN (E-UTRA) and Evolved Packet Core (EPC)
- IP Multimedia Subsystem (IMS) architecture and functions
- LTE/EPC Protocol stack
- PDN connectivity services
- Multicasting over LTE
- Non-3GPP access interworking

**LTE Access Network**

- OFDMA and SC-OFDM
- LTE Capacity and performance
- Reference Signals
- DL/UL Channellization
- MAC, RLC and PDCP layers
- Framing structures
- Resource allocation (Blocks, grids, elements)
- PDU structure
- MIMO systems
- LTE protocols
- RRC states, procedures and functions
- Radio Resource Management procedures

**Evolved Packet Core (EPC) architecture**

- EPC network functions
- EPC architecture
- EPC network elements (MME, S-GW, P-GW)
- LTE – EPC interworking interfaces (S1, X2)
- PDU transport over EPC
- Mobility management
- 3GPP nodes interworking
- Evolved User plane and control plane
- Network Identities (users, terminals, nodes, bearers)
- USIM, UICC and ISIM
- Service Bearers
- Service Data Flows
- QoS management by QoS Class Identifier (QCI)
- Priority Allocation/Retention (ARP)
- User Security in EPS
- Interworking protocols (S1AP, X2AP)
- Basic Procedures (Initial access, cell-selection, registration,...)
- Mobility management in IDLE and ACTIVE mode.
- LTE/EPC PS/CS services
- LTE/EPC MBMS service
- Supplementary Services