

Course ID

LTEA-ADO

Course Duration

5 days

Aimed At

Course Title

LTE & LTE-A RAN Design & Optimization

This is an advanced course aimed at experienced wireless network designers and optimizers who have a good understanding of LTE.

Prerequisites

Prior experience with LTE design and optimization issues.

Course in a Nutshell

This course undertakes an in-depth study of the planning and optimization considerations related to the advanced functionality of LTE and LTE-A networks, including the latest vendor-specific features. It will also help you understand and prepare for performance work related to the early 5G technology networks.

It's a practical course, taught by experienced engineers, that will utilize case studies based on real-world planning and optimization scenarios to help you thoroughly understand LTE and LTE-A design and performance planning issues. The case studies account for approximately 25% of the total course duration.

Customize It!

We can tailor the course to your needs by adding/omitting topics and incorporating case studies and data for your network. If you'd like us to focus the course on specific challenges faced by your team, let us know so we can address them in this course.

Course Outline

- Day 1 - LTE Idle Mode Functionality Review
 - Cell selection process: Criteria, normal camping
 - Cell reselection evaluation process
 - System information
 - Paging: DRX for paging
 - Related radio features enhancement
- Day 1 - Physical Layer Procedures
 - Radio Measurements (3GPP definition)
 - Radio link monitoring
 - Downlink transmission
 - Power control: Vendor Implementation discussions
 - Link adaptation (3GPP basic theory)
 - Uplink transmission
 - Random access
 - Preamble selection

- Channel Quality Indication (CQI)
 - Precoding Matrix Indicator (PMI)
 - Rank Indicator (RI)
- Day 2 - MAC Scheduler
 - Basic MAC scheduler functionality: Vendor basic features
 - Enhanced MAC scheduler performance: Vendor enhancements
 - LTE MAC scheduler and basic Radio Access Network Planning
 - Downlink/Uplink transmission overview
 - **Case studies: Checking MAC scheduler performance vs parameters**
- Day 2- LTE Coverage Planning Principles
 - Coverage considerations
 - Pathloss and Coverage design
 - Basic pathloss formulas (up to 2.6 GHz)
 - Extended pathloss formula for 3.6 GHz TDD
 - Measurement verified formula
 - **Coverage design exercises and case**
- Day 3- LTE and LTE-A Capacity Planning Considerations
 - Frequency planning
 - Channel allocation
 - Basic schemes
 - Fractional loading and SON FLP description
 - Capacity considerations
 - Capacity loss vs. Interference
 - MAC resource allocation principles
 - Configuration parameters vs. capacity design
 - Frequency planning, ICIC and capacity parameters
 - Enhanced vendor specific features vs. capacity
 - Examples and discussion
 - **Exercises using Excel-based tool**
 - **Case studies (mobile network & fixed wireless broadband)**
- Day-4 LTE Mobility Scenarios
 - Mobility scenario – Vendor specific
 - Intra-LTE mobility
 - IF mobility
 - IRAT mobility
 - LTE and LTE-A Enhanced Radio Features
 - Enhanced features and mobility
 - Enhanced features and radio planning considerations

- Volte related mobility – Vendor Specific
 - VoLTE functionality
 - SRVCC and mobility
 - Enhanced VoLTE mobility – Vendor enhanced features
 - CSFallback vs. RAN planning
- ***Case studies related to mobility vs. planning considerations***
- Day-5 LTE SON Solutions
 - SON mobility solutions – Vendor specific
 - ANR feature description
 - LTE feature enhancements
 - Mobility performance and RAN planning
 - SON interference mitigation
 - LTE radio features enhanced features
 - LTE HetNet solutions
 - LTE beamforming and HetNet solutions
 - HetNet solution and cell planning improvements

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