

Claytronics Solutions

LTE Training

All following LTE training content can be customized and delivered as per your needs.

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Summary

- 1. LTE Technology Overview (55 Hrs)
- 2. LTE L1 Stack (32 Hrs)
- 3. LTE L2 Stack (20 Hrs)
- 4. LTE L3-RRC Stack (75 Hrs)
- 5. LTE L3-NAS Stack (74 Hrs)
- 6. EPC Nodes (24 Hrs)
- 7. Interfaces Protocols (32 Hrs)
- 8. LTE Specific Topics (32Hrs)
- 9. Testing Conformance (32 Hrs)

Detailed breakup

- **1. LTE Technology Overview (21 session-55 Hrs)**
- **O1 Mobile Network Concepts -3**
- **O2-O3 LTE SAE Architecture - 5**
- **O4 Motivation to LTE - 2**
- **O5 OFDMA & SC_FDMA - 2**
- **O6 LTE Frame Structure - 3**
- **O7 PHY Chan Mapping - 3**
- **O8-O9 PHY Chan processing - 5**
- **O10-O11 PHY Layer Procedures- 4**
- **O12 MAC Overview - 4**
- **O13-O14 RLC Overview - 4**
- **O15 PDCP Overview - 2**
- **O16-O17 RRC Overview - 6**
- **O18-O19 NAS Overview - 6**
- **O20 Overview Review - 3**
- **O21 Overview Test - 2**

2. LTE L1 Stack (32 Hrs)

- **1.Channels/RS Mapping UL**
- **2.Channels/RS Mapping DL**
- **3.Phy Layer TB Processing Steps UL**
- **4.Phy Layer TB Processing Steps DL**
- **5.LTE PHY Layer Procedures**
- **6.DCI Formats & Interpretation**
- **7.UL Channels Procedures**
- **8.DL Channels Procedures**
- **9.Power Control (TPC)**
- **10.Random Access Procedure**
- **11.Resource Allocation and Types**
- **12.HARQ Procedure and PHICH**
- **13.Frequency Hopping Procedure**
- **14.TD-LTE & FDD Differences**

3. LTE L2 Stack (20 Hrs)

- 1.MAC Architecture
- 2.LTE-Advanced MAC Arch.
- 3.MAC Logical Channel Prioritization
- 4.MAC PDU's and Messages
- 5.RLC Architecture and Types
- 6.RLC-AM ARQ Procedure
- 7.RLC-TM and RLC-UM Procedures
- 8.PDCP Architecture & Functions

4. LTE L3-Access Stack (26 Sessions - 75 Hrs)

- **R1 RRC Idle Mode - Initial - 3**
- **R2 RRC Idle Mode -Cell Reselection - 5**
- **R3-R4 Paging Procedure - 6**
- **R5-R6 Sys Info from eNB- 6**
- **R7-R8 Connection Control-6**
- **R9 Intra-RAT Handover-3**
- **R10 Inter-RAT Handover-2**
- **R11 RRC Measurement Procedures-3**
- **R12 RRC timing Management-3**
- **R13 RRC MBMS -2**
- **R14 RF Parameters Analysis-2**
- **R15 RRC Message formation-3**
- **R16 RRC Review-3**
- **R17 RRC Test-2**
- **R18-R19 RRC Architecture & Design -8**
- **R20-R26 RRC development (Project) -20**
- **R20-R26 RRC Testing (Project) -20**

5. LTE L3-NAS Stack

(24 Sessions- 74 Hrs)

- **N1-2 NAS Overview - 5**
- **N3 NAS MM, CM, SM states - 3**
- **N4 NAS Security Overview - 3**
- **N5 NAS L3 Signalling Overview - 3**
- **N6 NAS MM Common Procedures-4**
- **N7-N8 NAS MM Specific Procedure-5**
- **N9 NAS CM Procedures-3**
- **N10 NAS Session Management Overview -2**
- **N11 NAS MME Initiated SM Procedures -3**
- **N12 NAS UE Initiated SM Procedures-3**
- **N13 NAS Messaging Summary-3**
- **N14 NAS IE's and Message Formats-3**
- **N15 NAS Review-3**
- **N16 NAS Test-3**
- **N17-N18 NAS Architecture & Design -8**
- **ND19-ND24 NAS development (Project) -20**
- **NT19-NT24 NAS Testing (Project) -20**

6. EPC Nodes (24 Hrs)

- 1.MME Functions
- 2.Overall QoS Concepts
- 3.S-GW Functions
- 4.P-GW Functions
- 5.PCRF Functions
- 6.HSS Functions
- 7. NNSF/ EPS Nodes Pooling

7. Interfaces Protocols (32 Hrs)

- 1.S1 Interface & S1AP
- 2.X2 Interface & X2AP
- 3.GTP-c Protocol
- 4.S5/S8 Protocol
- 5.PMIP Protocol
- 6.MBMS Protocol(M1,M2,M3)
- 7.Diameter Protocol

8. LTE Specific Topics (32Hrs)

- 1.HeNB/FemtoCell Architecture & Procedures
- 2.Relay Node Architecture
- 3.Minimization of drive Test
- 4.SON Overview and Procedures
- 5. NNSF and Node Pools Selection
- 6.CoMP - Co-ordinated Multi Point
- 7.ICIC Procedures
- 8.Voice and SMS and LTE today
- 9.VoLTE now and Future
- 10.LCS Architecture
- 11.SIP Overview
- 12.IMS Overview

9. Testing Conformance (32 Hrs)

- 1. Testing Physical Layer (36.521)
- 2. Testing MAC/RLC/PDCP (36.523)
- 3. Testing RRC (36.523)
- 4. Testing NAS (36.523)
- 5. eNB Conformance (36.141)