MPIRICAL
Innovating Telecoms Training

2G to 5G Mobile Networks (Advanced Level - Radio)

Course Description

This curriculum of our Air Interface range of courses is designed to provide a very detailed technical analysis of the radio environment associated with the main cellular technologies in use today. The curriculum is modular, which means that the 10 days of training can be spread over a number of weeks. Where possible, detailed signalling analysis will be included.

This course has no prerequisites.

11 days (Live**Onsite**, Live**Online**)

66 hours learning (Online**Anytime**)

66 CPD Learning Credits

Level: 3 (Advanced)

This course will contain the following sections:

1. GSM Air Interface (1 Day)

Topic areas covered include:

• The GSM Air Interface.

• GSM Air Interface Protocols.

• GSM Air Interface Procedures – Part 1.

• GSM Air Interface Procedures – Part 2.

• GSM Air Interface Mobility.

2. GPRS and EDGE Air Interface (1 Day)

Topic areas covered include:

• The GPRS Air Interface

• GPRS Air Interface Protocols.

• GPRS Air Interface Procedures.

• EDGE.

• Evolved EDGE.

3. UMTS Air Interface (2 Days)

Topic areas covered include:

• The UMTS Air Interface.

• UMTS Structure and Channels.

• UMTS Physical Layer.

• UMTS Physical Channels.

• UMTS Radio Resource Control.

• UMTS Operational Procedures.

• UMTS Mobility and Interworking.

4. HSPA Air Interface (1 Day)

Topic areas covered include:

• Cntroducing HSPA.

• HSPA+ Throughput Enhancement Methods.

• The HSPA+ Session.

• HSPA+ Operational Procedures.

5. LTE Air Interface (3 Days)

Topic areas covered include:

• E-UTRA Introduction.

• E-UTRA Physical Layer.

• LTE RRC.

• NAS in LTE.

• PDCP in LTE.

• RLC in LTE.

• MAC in LTE.

• Operational Procedures.

• Air Interface Mobility.

• X2 Interface Operation.

• Relay Nodes.

• SON.

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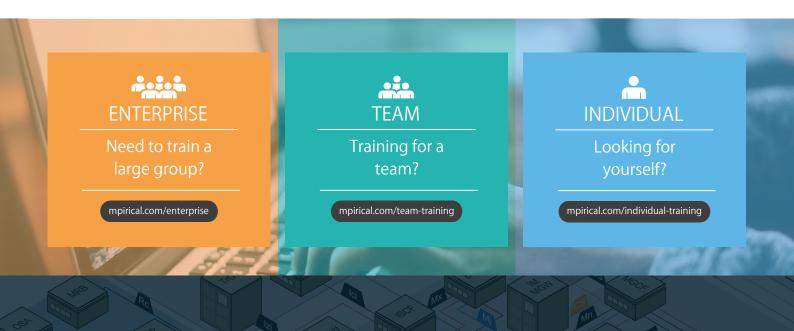
Live**Onsite**, Live**Online**, Online**Anytime**

6. 5G Air Interface (3 Days)

Topic areas covered include:

- 5G NG-RAN.

- 5G Physical Layer.

- 5G Massive MIMO and Beamforming.

- 5G Physical Layer and Channels Introduction.

- NR Downlink Physical Channels and Signals.

- NR Uplink Physical Channel.

- 5G Reference Signals.

- NR Layer 2 and Layer 3.

- 5G Scheduling.

- 5G Access Procedures.

5G Air Interface (cont.)

- EN-DC Operational Procedure.

- 5G Connected Mode Procedure.

- 5G Paging.

- 5G Measurements.

- 5G Carrier Aggregation.

- 5G Dual Connectivity.

- 5G Mobility.

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