# Welcome to RF Planning and Design

**LTE_133d | On-Demand | 5G Access | Express**
**Course Duration:** 1 hour

This course provides an overview of the concepts of RF design. It defines the steps taken to create an accurate and reliable design. A number of inputs are required for the RF design. The cell coverage area is determined by the chosen frequency and its propagation characteristics as defined by the terrain (made up of natural or man-made obstructions), the traffic conditions expected to be encountered and the choice of possible candidate antenna sites. This course discusses how each of these inputs are characterized in the design exercise and what tools are used to aid in the design. The design process is iterative. In summary, this course provides the foundation necessary for understanding RF design and role it plays in wireless networks.

## Intended Audience

This course is designed for a broad audience of personnel working in the wireless industry.

## Objectives

After completing this course, the student will be able to:

- Define the key steps in the RF design process
- Define key measurements used in network design
- Identify the tools used in network design
- Explain the propagation models applied
- Explain the differences between fast and slow fading and their influence
- Outline the influence of different morphologies on RF design
- Describe the role of link budgets in RF design

## Course Prerequisites

No Prerequisites

## Outline

1. Wireless Network Design Fundamentals
1.1 RF design fundamentals

2. Propagation Characterization
2.1 Propagation models and path loss
2.2 Multipath and fast fading
2.3 Shadowing and slow fading

3. Modeling Process
3.1 UE RF measurements
3.2 Coverage and capacity modeling
3.3 Link budget planning

4. Design Outputs
4.1 Cell size
4.2 Site selection

5. RF Planning Tools
5.1 RF planning tool

Putting It All Together

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