# CURRICULUM

# Know 5G System Principles (3GPPR17) | TP00002-K-1701

Last Updated 03/12/2024 Duration 3 hours, 6 minutes  $+ \pm \pm \pm 3$ 

## Details

### **Brief Description:**

• 5G is the latest generation of radio systems and network architecture that delivers extreme broadband, ultra-robust, low latency connectivity and massive networking for human beings and the Internet of Things. This training focuses on 5G System as it has been standardized so far. In this training, learn what is driving 5G, the technical performance requirements for the radio systems to support 5G, the 5G end to end Network Architecture, the verticals and specific services support as well as Core and Radio Principles. The course is based on the 3GPP Release 17.

#### **Target Group:**

• Everyone who require an introduction to 5G

## Learning Objectives:

The learner will be able to:

- List 5G drivers and potential use cases
- Discuss 5G System requirements
- Describe 5G System architecture
- List main 5G Core Network features
- Identify Verticals & Specific Services Support
- List main 5G Radio Access features

In detail the learner will be able to:

- 5G Key Drivers and Requirements
  - Explain what is driving 5G.
  - Describe 5G use cases.
  - Review 5G requirements.
  - List Key milestones for 5G developments.
  - Discuss time line for 5G standards and roll-out.
- 3GPP 5G System Architecture
  - List the requirements guiding the 5G architecture.
  - Explain the need for a new system architecture.
  - Review 5G Network deployment options.
  - Explain 5G Architecture main migration strategy.
  - Explain overall 5G System architecture.
  - Explain cloud native core architecture.
- 5G Network Slicing Overview
  - Explain what Network Slicing is.
  - Express Network slicing benefits.
  - Describe 5G network architecture for Network Slicing.
- Verticals & Specific Services Support
  - $\circ\;$  Explain Location and Positioning service.
  - Describe Non-Public Network.
  - Explain Time Sensitive Network & Time Sensitive Communication.
  - Describe Describe NR Unlicensed.
  - Explain NR-Light.
  - Explain Cellular IoT.

- Identify NR over Satellite.
- Describe V2X and side link in NR.
- Explain Public Warning System.
- Describe Public Safety.
- Explain Multicast-Broadcast Services.
- Describe Mission Critical Services.
- Identify Uncrewed Aerial Systems.
- Describe IMS in 5G.
- Explain Message Service.
- Describe XR.
- 5G NG-RAN Architecture
  - Describe NG-RAN Architecture
  - Identify NG-RAN Nodes
  - Explain 5G radio architecture options for cloud RAN gNB
  - Explain Architecture of Integrated Access & Backhaul
  - Identify NR Frequency Range
- Massive MIMO & Beamforming Basic
  Explain Massive MIMO and Beamforming basic concept.
- Multi-RAT Dual Connectivity
  Describe Multi-RAT Dual Connectivity in 5G

## Prerequisite:

- General telecommunications background (not enforced)
- TP00001-K-1701 Discover 5G (not enforced)

# **Contents:**

- 1 5G Standards, Use cases and Requirements
  - 1.1 5G Key Drivers and Requirements
- 2 5G Core Network Principles
  - 2.1 3GPP 5G System Architecture
  - 2.2 5G Network Slicing Overview
  - 2.3 Verticals & Specific Services Support
- 3 5G New Radio Principles
  - 3.1 5G NG-RAN Architecture
  - 3.2 Massive MIMO & Beamforming Basic
  - 3.3 Multi-RAT Dual Connectivity

Provider	NokiaLearn
Version	8.0
Available Language(s)	English (US)
Subject(s)	<u>5G Technology</u>

5G STANDARDS, USE CASES AND REQUIREMENTS	
ONLINE CLASS	5G Key Drivers and Requirements  TP00002-W-1701-01
5G CORE NETWORK PRINCIPLES	
ONLINE CLASS	3GPP 5G System Architecture   TP00002-W-1701-02
ONLINE CLASS	5G Network Slicing Overview   TP00002-W-1701-03
ONLINE CLASS	Verticals & Specific Services Support   TP00002-W-1701-04
5G NEW RADIO PRINCIPLES	
ONLINE CLASS	5G NG-RAN Architecture   TP00002-W-1701-05
ONLINE CLASS	Massive MIMO & Beamforming Basic  TP00002-W-1701-06
ONLINE CLASS	Multi-RAT Dual Connectivity   TP00002-W-1701-07
PRE/POST TEST	
TEST	Know 5G System Principles (3GPP R17)  TP00002-E-1701