

5G Technology Overview



Instructor Led Live Virtual Class

Duration: 4+1 Day | Course Number: LF-OS-200

5G Wireless Technology Crash Course, covers all aspects of 5G wireless vision, concepts, application, use cases, technologies and standards.

Attend LOGIC FINDER 5G Wireless Crash Course and learn about 5G evolutionary and revolutionary topics, technology A-Z. Explore the amazing 5G topics collection here, with new topics added constantly to broaden the reaches of the 5G *Crash Course* experience. This 5G Crash Course sets you on the right track to developing a set of 5G skills that can help you to deliver results.

Learn about ITU-T's IMT-202 5G requirements and 3GPP system standards heading into the 5G era including:

- Critical communication and public safety
- Enhancements for direct device-to-device (D2D) communications; TETRA/P.25-like functionality for broadband data.
- Group communications
- Machine-type Communications
- 5G NR and Radio optimizations to allow for lower cost
- System level awareness of M2M devices
- Device power consumption optimizations
- Mechanisms for optimized handling of small amounts of data
- System capacity and robustness
- Access Network Discovery and Selection Function (ANDSF)
- Enhancing the level of automation
- Decoupling software functions from the resources

Topics Included:

Overview of 5G

- 5G Standardization and Technology Options
- Analysis of 5G Use Cases
- 3GPP 5G NR, and Next GenCore
- ITU 's IMT2020

5G Application and Use Cases

- Enhanced Mobile Broadband(eMBB)
- Massive Machine Type Communication (MTC)/ Massive IoT
- Ultra Reliable and Low Latency Communication (URLLC)
- Critical Communications and Public Safety
- Autonomous Driving
- Vehicle to Vehicle (V2V) communication
- Smart Grid
- Smart City

3GPP LTE-A and LTE-A Pro Evolution into the 5G

- eLTE eNB: evolution of eNB that supports connectivity to EPC and NextGen Core
- NR:New Radio
- gNB: NR node
- NextGen Core
- mmWave principals in 5G
- Millimeter Wave (mmW) Technology at a Glance
- Introduction to mmW
- Millimeter wave definitions for 5G
- Performance of a typical 5G wireless system
- mmW Modeling and Simulation
- mmW Systems Engineering
- Core Network for Next Generation System
- NG:The interface between gNB and a NextGen Core

LTE / LTE-Advanced Introduction

- Carrier Aggregation (CA)
- Dual Connectivity (DC)

- LTE Unlicensed / LTE License Assisted Access (LAA)
- LTE-WiFi Radio Level Aggregation (LWA)
- LTE Broadcast / Multicast Techniques and Future Terrestrial TV
- Group Communication Service Enabler (GCSE)
- Discovery and Device to Device (D2D) for Proximity Services
- Proximity Service Architecture and Protocol
- Vehicle to Vehicle (V2V) Services
- Architecture Enhancements for V2X Services
- LTE Machine Type Communication for Internet of Things
- New LTE Access Scheme: Narrowband Internet of Things (NB-IoT)

- Licensed Assisted Access (LAA)
- 5G and Wi-Fi Offload
- LTE-U, LAA and LWA
- Full Dimension MIMO (FD-MIMO)
- TDD / FDD Evolution
- LTE-A/Pro Broadcast

5G Wireless Requirements, Applications, and Services

- 5G New Radio (NR)
- 5G Next Generation System Architecture
- MTC enhancements
- 5G Public safety features
- D2D and ProSe
- small cell dual-connectivity and architecture
- carrier aggregation enhancements
- Interworking with Wi-Fi
- Licensed assisted access (at 5 GHz)
- 3D/FD-MIMO
- Indoor positioning
- Single cell-point to multi-point

5G integration with 802.11ax, 802.11ay and 802.11az

5G Technology Enablers

- Public Safety applications with 5G
- LTE Direct
- Proximity Services (ProSe)
- Device to Device (D2D) Communication
- SON (Self-Organizing Networks) and SON+
- Voice over Wi-Fi (VoWiFi)
- Video over WiFi
- Role of Small cells, Coordinated Multipoint (CoMP) and Massive MIMO in 5G
- Enhanced Carrier Aggregation
- Role of Cloud and Virtualization in 5G
- Cloud RAN Overview
- Overview of CPRI
- C-RAN Architecture
- Network functions virtualization (NFV)
- Software-Defined Networking (SDN)
- OpenFlow
- OpenStack

5G Security

- 5G Cybersecurity
- 5G Security Challenges
- 5G Security goals and standards
- Analysis of 5G Products and Solutions