

Introduction to 5G

5G promises to enable a wide variety of new wireless communications services and capabilities, ranging from high-speed high-capacity broadband access to extremely reliable low-latency communications to machine-type communications on a massive scale. In order to deliver on these promises, everything about the wireless network must change, including the devices, the radio interface, the radio access network (RAN), and the core network. This course provides an overview of the usage scenarios envisioned by the wireless industry and highlights the changes and enhancements being defined in the 3GPP standards. This course is delivered in a blended format, including two live web sessions along with self-paced multimedia content, allowing students to learn in bite-sized chunks over a three-week interval.

Intended Audience

This blended (self-paced and instructor-led) course is intended for a technical audience looking for an overview of the drivers for 5G and a basic understanding of the underlying technologies being considered.

Objectives

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

- Describe the 5G usage scenarios defined by the ITU and 3GPP
- Identify the technology building blocks needed for 5G
- Explain the key enhancements to the 5G RAN and core network architectures
- Discuss benefits of enhanced network capabilities, such as MEC, network slicing, and C-RAN
- Identify the new spectrum bands being considered for 5G
- Discuss radio interface enhancements
- Illustrate the key 5G deployment scenarios

What You Can Expect

- Total Program Duration: 4 WEEK
- Expert-Led Live Duration: 2 HOUR
- Self-Paced Duration: 5 HOUR

Outline

1. Introduction to 5G Services

- 1.1 5G overview
- 1.2 ITU/3GPP usage scenarios
- 1.3 5G performance targets
- 1.4 5G technology building blocks

2. Introduction to 5G Networks

- 2.1 5G RAN and core network architectures
- 2.2 Mobile Edge Computing (MEC)
- 2.3 Network slicing
- 2.4 Cloud RAN (C-RAN)
- 2.5 5G deployment options

3. Introduction to 5G New Radio

- 3.1 5G spectrum
- 3.2 Massive MIMO
- 3.3 5G radio enhancements
- 3.4 5G channel coding
- 3.5 5G transport
- 3.6 5G industry update

Final Assessment