

Course Dictionary

This dictionary is created to help you grasp on the topic of 5G. Here you can find explanations to words and concepts that arise during the mandatory introductory lectures. The words are listed in an alphabetical order. To find a specific word, use the commands `cmd+f`.

Word or concept	Definition
5G Core	The 5G Core will be the heart of the network and acts as an anchor point for multi-access technologies. It needs to deliver a seamless service experience across fixed and wireless access technologies.
Augmented reality (AR)	Interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometimes across multiple sensory modalities. AR can be defined as a system that fulfills three basic features: a combination of real and virtual worlds, real-time interaction, and accurate 3D registration of virtual and real objects.
Bandwidth	A measurement of the amount of information that can be sent between computers, through a phone line, etc.
Base station	A short-range transceiver which connects a cordless phone, computer, or other wireless device to a central hub and allows connection to a network.
Beamforming	Beamforming is a technique that focuses a wireless signal towards a specific receiving device, rather than having the signal spread in all directions from a broadcast antenna, as it normally would.
Broadband	A high-capacity transmission technique using a wide range of frequencies, which enables a large number of messages to be communicated simultaneously.
Channel coding	A way of encoding data in a communications channel that adds patterns of redundancy into the transmission path in order to lower the error rate. Such methods are widely used in wireless communications.

Control loop	The fundamental building block of industrial control systems. It consists of all the physical components and control functions necessary to automatically adjust the value of a measured process variable (PV) to equal the value of a desired set-point (SP).
Data plane	In computing, the data plane is the part of the software that processes the data requests.
Data rate	The data rate is a term to denote the transmission speed, or the number of bits per second transferred. In telecommunications, it is common use to express the data rate in bits per seconds (bit/s). In data communication, the data rate is often expressed in bytes per second (B/s).
Data-driven society	A Society where almost every action and decision is "moved, operated or controlled" by data. The phenomenon of data offers limitless opportunities to improve society, empowering individuals and benefitting many businesses.
Distributed computing	Distributed computing is a model in which components of a software system are shared among multiple computers to improve efficiency and performance.
Dual connectivity	Dual connectivity allows a device to aggregate 4G LTE and 5G NR signals to achieve a higher throughput and a more consistent network.
Dynamic spectrum sharing (DSS)	Technology that allows the deployment of both 4G LTE and 5G NR in the same frequency band and dynamically allocates spectrum resources between the two technologies based on user demand.
Edge computing	The practice of processing data near the edge of the network where the data is being generated, instead of in a centralized data processing warehouse.
Extended reality (XR)	An emerging umbrella term for all the immersive technologies. The ones we already have today—augmented reality (AR), virtual reality (VR), and mixed reality (MR) plus those that are still to be created.
Frequency bands	A range of frequencies in a spectrum between two limits, especially as used in telecommunications.

Haptic interface	Haptic interfaces are devices that enable manual interaction with virtual environments (VEs) or teleoperated remote systems. They are employed for tasks that are usually performed using hands in the real world, such as manual exploration and manipulation of objects.
Hardware	The machines, wiring, and other physical components of a computer or other electronic system.
Human-machine interface (HMI)	User interface or dashboard that connects a person to a machine, system, or device. While the term can technically be applied to any screen that allows a user to interact with a device, HMI is most commonly used in the context of an industrial process.
Immersive technology	Technology that attempts to emulate a physical world through the means of a digital or simulated world by creating a surrounding sensory feeling, thereby creating a sense of immersion.
Internet of Things (IoT)	The interconnection via the Internet of computing devices embedded in everyday objects, enabling them to send and receive data.
Low latency	Low latency describes a computer network that is optimized to process a very high volume of data messages with minimal delay (latency). These networks are designed to support operations that require near real-time access to rapidly changing data.
Massive machine type communications (mMTC)	Machine type communications is a communication paradigm where a number of devices or 'things' are attached to the Internet or directly connected and communicate with each other with little or without human intervention. In the 5G era, new applications for MTCs are developed to serve a huge number of 'things', introducing the so-called massive MTC (mMTC), or massive Internet of Things (mIoT). This autonomously communicating machines will create more sophisticated mobile traffic, in machine-to-machine (M2M) domains.
Narrowband IoT (NB-IoT)	A standards-based low power wide area (LPWA) technology developed to enable a wide range of new IoT devices and services. NB-IoT significantly improves the power consumption of user devices, system capacity and spectrum efficiency, especially in deep coverage

Phase Noise

In signal processing, phase noise is the frequency-domain representation of random fluctuations in the phase of a waveform, corresponding to time-domain deviations from perfect periodicity

Radio access network (RAN)

The part of a telecommunications system that connects individual devices to other parts of a network through radio connections. A RAN resides between user equipment, such as a mobile phone, a computer or any remotely controlled machine, and provides the connection with its core network.

Round trip delay (RTD)

In telecommunications, the round-trip delay (RTD) or round-trip time (RTT) is the length of time it takes for a signal to be sent plus the length of time it takes for an acknowledgement of that signal to be received.

Smart Grid

An electricity network based on digital technology that is used to supply electricity to consumers via two-way digital communication.

Software

The programs and other operating information used by a computer.

Subcarrier

A carrier wave modulated by a signal wave and then used with other subcarriers to modulate the main carrier wave.

Value network

A value network is a set of connections between organizations and/or individuals interacting with each other to benefit the entire group.

Virtual reality (VR)

Computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.