5G Networks

Discover 5G Technology and the End-to-End 5G System

An IEEE eLearning Library Course Program

5G is the next generation of radio systems and network architecture that delivers extreme broadband, ultra-robust, low latency connectivity, and massive networking for the Internet of Things. As LTE technology evolves toward 5G, it's vital for technical professionals and industry leaders to understand how to deliver on the 5G vision and meet consumer demand for higher communication speeds.

In this cutting-edge course program, produced in cooperation with Nokia, learners will receive an in-depth view of performance requirements, future scenarios, and the roadmap to implementation. With over twelve hours of material, the program also explores the intricacies of 5G standardization by the 3rd Generation Partnership Project (3GPP) and the IEEE 802 LAN/MAN Standards Committee.

These courses are designed for professionals working on 5G implementation, including service fulfillment personnel who will be supporting 5G, engineers and technical professionals with telecommunications backgrounds who want to expand their knowledge of 5G, and telecommunications leaders who are preparing their organizations and systems for the future.

Nokia

This course program is produced in cooperation with Nokia, a globally recognized leader in 5G. Nokia is working with both Communication Service Providers and leading industry players to realize the full potential of 5G.

IEEE 802 LAN/MAN Standards Committee

The IEEE 802 LAN/MAN Standards Committee (IEEE 802 LMSC) is a key contributor to this course program. The IEEE 802 LMSC develops, maintains, and advocates for networking standards, as well as recommended practices, on a global basis.

5G Networks Quick Facts

6-course program designed to give engineers an understanding of 5G technology from an end-to-end perspective

Courses developed and peer reviewed by experts in their fields, a process that guarantees the quality of technical content

Printable IEEE CEU or PDH certificates awarded upon successful completion of the program

Available on-demand through IEEE *Xplore*, the IEEE Learning Network (coming soon!) or order files to load on a company LMS

Organizational pricing available: pay one price for all users in an organization. Multi-program discounts also available.

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Courses Included in the 5G Networks Program:

Discover 5G

Learn what is driving 5G as well as the technical performance requirements for radio systems to be able to support 5G New Radio and Core networks. A wide portfolio of future scenarios and use cases will also be identified.

5G System Principles

Learn about 5G technology components (including 5G Spectrum, Massive Multiple Input Multiple Output (MIMO) and 3D-Beamforming principles, and Multi-RAT Dual Connectivity) along with the main features of 5G Core Network and 5G Radio Access. This segment will focus on how the 5G system has been standardized thus far and how the roadmap for 5G standards will be deployed. A timeline of the rollout will be presented.

Understanding 5G Fundamentals

Dive into 3GPP 5G system architecture, security, quality of service, and network slicing. The 5G NR Spectrum, operating frequency bands, and spectrum sharing mechanisms will also be explored. Following this training segment, learners will have a better grasp on the Network Interfaces protocols and the main functions of each protocol layer.

IEEE 802.11 Radio Standards Evolution

Review the IEEE standards development process through the IEEE 802.11 radio standards technology evolution. The role of IEEE 802.11 components in both existing carrier deployments and network solutions providing 5G services is described. Learners will have a better grasp on spectrum sharing, the Network Interfaces protocols, and the main functions of each protocol layer.

IEEE 802.11 Radio Technology Components with Focus on 802.11ax, 11ad, 11ay

Focus on how IEEE 802.11 radio systems are integrated into the 5G architecture as well as specific IEEE 802.11 technology components including (a) IEEE 802.11ax, High Efficiency Wireless LAN in the 2.4 and 5 Gigahertz bands, and (b) IEEE 802.11ay and 802.11ad for operation in the millimeter 60Gigahertz bands.

IEEE 802.11 Use Cases for 5G Fixed Wireless Access, Backhaul, VHT/Line of Sight, Dense Urban and Indoor Hotspot

Explore IEEE 802.11 use cases for 5G systems such as the Indoor Hotspot and Dense Urban scenarios as defined by IMT-2020. Fixed wireless and backhaul use cases, which leverage 802.11ad and 802.11ay technology, along with Very High Throughput (VHT) and line of sight use cases are also described.

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A4 11/19