Publication date : 04/15/2024

Course : 5G mobile networks, overview

Synthesis course - 2d - 14h00 - Ref. GYN
Price : 1720 € E.T.

This course will give you an overview of current initiatives relating to 5G, the mobile telecommunications standard following on from 4G LTE and LTE-A Pro. You'll discover the main technical evolutions and new services that will most certainly be present in future 5G networks.

Teaching objectives

At the end of the training, the participant will be able to:

- Understand the technical objectives
- Understanding the main radio evolutions expected in 5G
- Learn about the main architectural evolutions expected in 5G
- 5G services

Intended audience

IT and network engineers, mobile network managers and design managers.

Prerequisites

Good knowledge of networks, IT or telecoms.

Course schedule

1 Towards a new generation

- 2G, 3G and 4G: from architecture to services.
- Initiatives and standardization: stamped 5G projects, manufacturer/operator initiatives, expected schedule.
- 5G objectives: what are the technical challenges? What kind of 5G world lies ahead?

PARTICIPANTS

IT and network engineers, mobile network managers and design managers.

PREREQUISITES

Good knowledge of networks, IT or telecoms.

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

2 5G from a radio perspective

- Towards new frequencies: from 3 GHz to 6 GHz and beyond.
- Filtered OFDM, yes, but which one? FBMC, UFMC, GFDM, F-OFDM.
- New developments in duplex and structure: FDD/TDD, dynamic TDD, Full Duplex channel, Frame/Subframe structure.
- New DMA techniques: Non Orthogonal Multiple Access (NOMA), Sparse Code Multiple Access (SCMA).
- MIMO developments: from MIMO Spatial Multiplexing to Massive MIMO.
- New forms of Carrier aggregation.
- New on the channel coding front: LDPC and Polar Code.
- Various developments: Time Reversal, FQAM & APSK modulations.

3 The network side of 5G

- The SDN approach: principles, protocols and interfaces.
- From SDN to virtualization: principles, protocols and interfaces.
- NFV concept: principles, ETSI initiative, example of LTE core network virtualization.
- From RAN to Cloud RAN principles, protocols and interfaces.
- Towards a more flexible network: network slicing, control/data separation, CDN contribution, service chaining.
- Update on the progress of the 3GPP 5G standard on the radio and architecture sides.
- 4G (LTE) - 5G (NR) interoperability solutions.

4 The service side of 5G

- What's new in Audio and Video: from AMR to EVS, from H.261 to H.265, DASH video developments.
- The rise of M2M (Machine-to-Machine) and IoT (Internet of Things): from LTE-M to NB-IoT and beyond?
- Critical applications: GCSE, MCPTT, D2D to 5G public safety solutions.
- Vehicle applications: from V2V to V2X.
- Multicast and Broadcast 5G applications: from 4G eMBMS to 5G eMBMS.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

Dates and locations

REMOTE CLASS
2026 : 21 May, 6 Oct., 3 Dec.

PARIS LA DÉFENSE
2026 : 21 May, 6 Oct., 3 Dec.