Publication date : 05/07/2024

Course : LTE/4G mobile networks

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

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This course will give you an overview of the evolution of technologies towards 4G, pre-4G solutions, its technical solutions, its economic future, 4G services and its inclusion in [[full IP]].

Teaching objectives

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

- Understanding 4G network architecture
- 4G services
- Understanding convergence and Internet integration
- Present future prospects and developments

Intended audience

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

Prerequisites

Good knowledge of networks, IT or telecoms.

Course schedule

1 Next-generation architecture

- Introduction to 4G technologies. 4G OFDMA and SOFDMA techniques.
- Advantages and disadvantages compared with 3G and CDMA.
- 4G network architecture. Which architecture for which application in 4G?
- All-IP: advantages and disadvantages. Fixed-mobile convergence: IMS.

2 Pre-4G networks

- Fixed and mobile WiMAX networks. WDSL and the performance you can expect.
- Standards for future IEEE 4G generations.
- IEEE 802.22 and regional networks for interactive television.
- New generations of Wi-Fi and their impact on 4G.

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.

3 4G mobile networks

- Fourth generation (4G), HSOPA and LTE. The 4G revolutions.
- Very high data rates: over 100 Mbit/s peak.
- 4G with LTE (Long Term Evolution) and UMB (Ultra Mobile Broadband). WWI (World Wireless Initiative).
- The first 4G operators. 4G terminals. LSTI (LTE/SAE Trial Initiative) tests.
- 4G services. Audio video services. P2P services and T2T in general. Web services and security.

4 Internet convergence and integration

- Fixed-mobile convergence. IMS (IP Multimedia Subsystem): IP-Telecom convergence.
- IMS architecture.
- The TISPAN working group.
- The mobile IP solution: advantages and disadvantages. IPv4 and IPv6 versions.
- Cellular IP and micromobility. Comparison with cellular network mobility.
- Which solution for the fourth generation: Home Agent and Foreign Agent or HLR/VLR?
- Route optimization; smooth handovers.

5 Ad hoc and MANET networks for 4G

- Ad hoc network architectures.
- Optimizing spectrum use.
- The impact of the IP world on ad hoc networks.
- Standardized OLSR and AODV protocols.

6 Perspectives and conclusions

- The place of DTT (Digital Terrestrial Television) in 4G.
- 4G networks and Full IP.
- New autonomous architectures for 4G control.
- Virtualization of 4G equipment.
- Developments such as LTE-Advanced.

Exercise

WiMAX network throughput calculation.

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 : 9 June, 1 Dec.

PARIS LA DÉFENSE
2026 : 9 June, 1 Dec.