

Mobile Communication Networks Syllabus

The course examines the network architecture as well as the functional details of the protocols for GSM-GPRS-3G WCDMA-4G LTE mobile networks. In particular, the course lectures cover the following topics:

- Fundamental Concepts and Operation Principles of Mobile Communication Networks
- Network Design of Mobile Cellular Networks: Channel / Frequency Planning – Traffic, Grade of Service and Channel Allocation – Network Dimensioning and Network Capacity.
- Mobile Communications Network and Protocol Architecture: Wireless Access Network / Backbone Network / Physical Layer - Mobile Communication Channel and Transmission Technologies / Link Layer / Radio Resource Management / Mobility Management / Connection Management / Radio Multiple Access Techniques.
- GSM Network and Protocol Architecture: GSM Radio Resource Management-Mobility Management– Connection Management.
- 3G UMTS Network and Protocol Architecture (3GPP Release 99). 3G UMTS (3GPP Release 99) Radio Resource – Mobility – Connection Management.
- 3G UMTS Amendments: 3GPP Rel 5 /6/7.
- 4G LTE (3GPP Rel 8) and 4G LTE-Advanced (3GPP Rel 10) Operational Principles.
- Performance targets and candidate technologies for 5G Mobile Networks.