



Aalto University  
School of Electrical  
Engineering

# ELEC-E7230 – Mobile Communication Systems

*Prof. Tarik Taleb*  
*School of Electrical Engineering*  
*Aalto University*

# Content

- **Mobile Network Architectures Evolution**
  - MN Arch. Evolution: 2G to 3G
  - Evolved Packet System
    - Core NW Architecture & components
    - Protocols
  - 5G Core Network
  - Service Based Architecture
- **5G Mobile Networks**
  - Requirements and features
- **Cloud-based Mobile Core Networking**
  - Network Function Virtualization
  - Software Defined Networking
  - Core Network Virtualization
- **Evolved RAN: LTE, LTE-Advanced and LTE-Advanced Pro**

# Grading Policy

- In-class exercises
    - 30% of course grade
  - Assignment
    - Presentation of a scientific publication relevant to the course – 30% of course grade
- OR**
- Lab cases (based on some educational simulation software )
    - A report for one of the labs selected
    - Some Matlab experience is required
- Examination
  - 40% of course grade

# Important Dates

- Lecture 1: Mon 09.09.19 12:15 - 14:00 Room AS4 (1023-1024)
- Lecture 2: Fri 13.09.19 12:15-14:00 Room AS3 (1021-1022)
- Lecture 3: Mon 16.09.19 12:15 - 14:00 Room AS4 (1023-1024)
- Lecture 4: Mon 30.09.19 10:15 - 12:00 Room U256, Otakaari 1
- Lecture 5: Mon 30.09.19 12:15 - 14:00 Room U256, Otakaari 1
- Lecture 6: Mon 07.10.19 12:15 - 14:00 Room U256, Otakaari 1
- Assignment - Scientific paper presentation day 1: (Week 41 or 42) to be confirmed
- Assignment - Scientific paper presentation day 2: (Week 41 or 42) to be confirmed
- Examination: Tue 22.10.2019 09:00-12:00 Room AS1 1018

# Learning Outcome

- Understanding the migration scenarios from 2G/3G to 4G and 5G
- Factual knowledge of EPC, LTE/LTE-Advanced and 5G architecture
- Basic understanding of recent RAN technologies (from LTE towards 5G NR)
- Familiarity with latest developments in NFV, SDN and Network Softwarization
- Development of skills for research and presentation of complex concepts to a general audience
- Development of technical writing skills

# Office Hours

- Wednesdays, 11 Sep.- 23 Oct., 16:00 - 17:00 (Room 2585, Maarintie 8)



Dr. Edward Mutafungwa