FIK3509 Energy Efficient Mobile Networks 3.0 credits

Energieffektiva mobilnät

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FIK3509 valid from Spring 2014

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Advanced level wireless communication and networks

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After the course the student should be able to:

- Explain the drivers and motives for an R&D demand in the area of energy efficiency/savings in wireless networks
- Explain and motivate analysis methodologies of energy efficiency of mobile networks
- identify key problems of energy effieciency of mobile networks
- Be able to evaluate, besides wireless networks, the overall energy consumption of computer networks in a holistic view, including backhaul/fronthaul and cloud networks.

Course contents

1. Fundamental, power consumption break down in a mobile network
2. EE features in legacy systems, 2G, 3G and 4G and in general what needs to be changed in a 5G system
3. Separation of Data and Control Plane to serve as a green system architecture (5GrEEn)
4. Green deployment strategies (Hetnets)
5. Massive MIMO as a green solution
6. Impact of backhaul/fronthaul on the EE of mobile networks
7. Metrics and measures
8. Power Models
9. IoT and M2M
10. EE of broadband networks: End to end perspective

Course literature

Vetenskapliga artiklar

Examination

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

PRO1 Project, 3 hp

Grading scale: P/F

Ethical approach

- All members of a group are responsible for the group's work.

- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.