HI1035 Mobile Communications and Wireless Networks 7.5 credits

Mobil kommunikation och trådlösa nät

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

Establishment

On 2019-10-15, the Head of School of CBH has decided to established this official course syllabus to apply from spring 2020(registration number C-2019-2008).

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Completed course HI1033, Communication Networ

Language of instruction

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

Intended learning outcomes

By the end of the course the student should be able to

· Describe and discuss by arguments common technologies used in digital wireless and mobile communications

· Find, compile, summarize, and present a defined topic within the course's subject area

· Investigate radio wave propagation and do radio planning using simulation

· Implement in software, common networking mechanisms for wireless networks

· Analyse and explain the activity in wireless local area networks

Course contents

The course gives insights in principles and systems solutions for digital communications in wireless and mobile networks. The course predominantly covers the following topics:

· antennas and radio wave propagation, including attenuation, fading, MIMO, and beamforming

· measurement and estimation of link quality for adaptive wireless communications

· modulation methods, including OFDM

· spread spectrum and frequency hopping

· medium access, including FDMA, TDMA, CDMA, and OFDMA

· Error detection and correction using convolutional codes, cyclical codes, block codes, and interleaving

· calculations of the maximum transmission range for radio under given circumstances

· energy saving mechanisms for wireless communications

· cellular mobile telephony systems, including radio interfaces, signaling, and cell planning

· the wireless standards IEEE 802.11 and 802.15

· new developments in the subject area

Examination

- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Lab Work, 3.0 credits, grading scale: P, F

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.

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.