Wireless Communication Systems

Programme course

6 credits

Trådlösa kommunikationssystem

TNK080

Valid from: 2017 Spring semester

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2017-01-25

Offered for the last time
Spring semester 2018

Main field of study
Electrical Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- Intelligent Transport Systems and Logistics, Master's programme
- Electronics Design Engineering, M Sc in Engineering
- Communication and Transportation Engineering, M Sc in Engineering

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Telecommunication or Mobile Communication

Intended learning outcomes
The course intends to provide knowledge in the area of wireless communication. The aim is to
- introduce the concept of wireless communication
- understand problems specific for wireless communication and technical solutions
- understand design, construction and evaluation of wireless systems using radio communication.
- give en overview on some existing systems

Course content
Basics about radio communication system: frequency spectrum and its properties, frequency bands, overview on various radio systems. Signal propagation in free space, antennas. Stochastic channel models: fading and shadowing. Data transmission over radio channels: modulation schemes, transmission over fading channels. Diversity methods. Coding methods: block codes and convolutional codes, coding gain. Multiple access. Spread-spectrum, OFDMA. Standards and technology: Cellular Systems, Machine-to-Machine/Ad-Hoc networks.

Teaching and working methods
The course consists of lectures and tutorials.

Examination

UPG1	Project	1.5 credits	U, G
TEN1	Examination	4.5 credits	U, 3, 4, 5

Grades
Four-grade scale, LiU, U, 3, 4, 5

Other information
Supplementary courses:
Network simulation.

Department
Institutionen för teknik och naturvetenskap

Director of Studies or equivalent
Erik Bergfeldt

Examiner
Evangelos Angelakis

Education components
Preliminary scheduled hours: 50 h
Recommended self-study hours: 110 h

Course literature
A. Goldsmith, Wireless Communications, Cambridge University Press, 2005.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.