Mobile Networks

Programme course

6 credits

Mobila nätverk

TDDD66

Valid from: 2017 Spring semester

Determined by
Board of Studies for Computer Science
and Media Technology

Date determined
2017-01-25

Replaced by
TDDE48

Main field of study
Information Technology

Course level
First cycle

Advancement level
G2X

Course offered for
- Information Technology, 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
Knowledge in Computer networks or Computer networks and distributed systems.

Intended learning outcomes
After the course, the students are expected to be able to:
- Explain, discuss, and analyze the basic types of protocols, communication channels, and network types associated with mobile and wireless networking
- Explain, discuss, and analyze fundamental performance tradeoffs, including showing an understanding of where delays can occur in a network, what different types of delay and packet losses that exist, the impact of packet losses and jitter have on various protocols, and the energy consumption in different devices and architectures
- Apply and analyze of the network architecture and the protocols associated with the different layers; explain how they are implemented, and the conditions under which they are designed and operate
- Explain and analyze the most common architectures used for wireless communication, how the most important protocols work, and the service they provide
- Design and implement their own application-layer protocols and services for the context of mobile and wireless networks

Course content

This course offers an in-depth coverage of mobile and wireless networks, and will help build a deep hands-on understanding of techniques and methods that are used for mobile communication. The course focuses on tcp/ip-based networks, with a particular emphasis on the performance aspects associated with applications and upper-layer protocols. The course will consider both the impact underlying protocols, architectures, and techniques have on the performance at the upper layers, as well as the design tradeoffs associated with the protocols and architectures themselves. The course will also discuss sustainability related issues such as battery consumption, power-awareness, as well as more traditional performance tradeoffs and reliability issues. Network simulation and analysis of protocols and architectures. The course content will be adjusted based on current trends and the research frontier.

Teaching and working methods

The course consists of both theory (lectures, assignments, and scenario-based group tasks) and practical hands-on training and exploration (assignments and project). The course has a written final exam. The project should result in a written report, should be presented in a seminar during which the students will act as both presenters and opponents (evaluating and providing each other with feedback, such as to improve the reports and projects). Assignments and projects should be done in groups of two.

Examination

BAS1	Work in PBL groups	1 credits	U, G
LAB1	Laboratory work	1 credits	U, G
UPG1	Project assignment	2 credits	U, 3, 4, 5
TEN1	Written examination	2 credits	U, 3, 4, 5

The final grade is based on the overall knowledge and understanding that can be displayed at the end of the course.

Grades

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

Other information

Supplementary courses: Term project in the following spring; Advanced Networking; Individual projects

Department

Institutionen för datavetenskap

Director of Studies or equivalent
Patrick Lambrix

Examiner
Niklas Carlsson

Course website and other links

Education components
Preliminary scheduled hours: 34 h
Recommended self-study hours: 126 h

Course literature

Additional literature

Books

Kurose, J. F. & Ross, K. W, (2012) *Computer networking: a top-down approach* Sixth Edition
Siva Ram Murthy, C. & Manoj, B. S, (2004) *Ad hoc wireless networks: architectures and protocols*

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.