Data Communication and the Internet

Programme course

6 credits

Datakommunikation och Internet

TNK087

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
Computer Science and Engineering, Electrical Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- Intelligent Transport Systems and Logistics, Master's programme
- 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
Basic Course in Computer Networking, e.g. TNK108 Computer Networking

Intended learning outcomes

The course aims at provide the participants with comprehensive knowledge in data communications with focus on the IP protocol, the data link layer, and communication protocols for wireless and mobile networks. Moreover, the course is intended to let the participants gain practical skills in setting up computer networks. Most of today's data communication uses the Internet. New applications appear constantly. The course deals with the key technologies used by the Internet, and how new communication solutions can be formed using the Internet as the infrastructure. The course focuses on techniques and protocols at the network communication model.
After completing the course, the participants are expected to be able to

- Identify the connections between the course subjects and their study program, and thereby justify the learning of these subjects.
- Identify the most essential components in building wired and wireless networks.
- Describe the functions of the layers in the model.
- Tell the differences between various routing protocols and algorithms
- Compare and explain the application areas of various protocols at the data link layer
- Associate various concepts, components, techniques, and functions to layers
- Describe techniques that are used to implement Internet access via wireless networks
- Describe the impact of wireless links on the protocols used by the Internet
- Explain the underlying concepts and common solutions for service quality.
- Explain the possibilities and limitations of the Internet for real-time communications.
- Design and configure networks, and assess network performance.
- Analyze and evaluate data communication solutions based on in-depth knowledge in protocols and the Internet.

Course content

Advanced topics in computer networking, mainly within wireless networking, quality of service and performance engineering.

Teaching and working methods

The course contains lectures and laboratory assignments.

Examination

LAB1	Laboratory assignments	3 credits	U, G
PRA1	Project	3 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
Scott Fowler

Course website and other links
http://http://www2.itn.liu.se/utbildning/kurs/

Education components
Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

Course literature
Föreläsningsanteckningar och kompletterande material

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.