

Network Simulation

Programme course

6 credits

Nätverkssimulering

TNK092

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

Autumn semester 2018

Replaced by

TNK117

Main field of study

Computer Science and Engineering, Electrical Engineering

Course level

Second cycle

Advancement level

A1X

Course offered for

- 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

Data communications and mobile communications, or equivalent.

Intended learning outcomes

The course is intended to provide the participants knowledge in modeling and simulation of telecommunication networks. The course features software commonly used for telecommunication network simulation. In addition to the basic theory necessary for understanding network simulation, the course aims to give practical skills in using these tools to design and implement simulation models for performance analysis of wired as well as wireless networks. After completing the course, the students should be able to:

- Describe the main quantitative methods for performance evaluation of telecommunication networks
- Explain the advantages and drawbacks of using simulation as a tool for analysing telecommunication networks
- Describe common assumptions, simplifications, and generalisations made in modeling telecommunication systems
- Implement, verify and validate simulation models of telecommunication networks
- Design, build, and experiment with simulation models, as well as evaluate the results obtained by simulation

Course content

Modeling and performance analysis of telecommunication networks. Tools and software for network simulation. Design, implementation, verification, and validation of simulation models for analysing wired and wireless networks. Evaluation and presentation of simulation results.

Teaching and working methods

Lectures, labs, and project work.

Examination

LAB1	Laboratory work	2 credits	U, G
PRA1	Project work	4 credits	U, 3, 4, 5

Grades

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

Department

Institutionen för teknik och naturvetenskap

Director of Studies or equivalent

Erik Bergfeldt

Examiner

Scott Fowler

Education components

Preliminary scheduled hours: 48 h

Recommended self-study hours: 112 h

Course literature

Additional literature

Books

Hassan, Mahbub, Jain, Raj, (2004) *High performance TCP/IP networking : concepts, issues, and solutions*

ISBN: 0130646342, 0131272578

Upper Saddle River, N.J. : Pearson/Prentice Hall, cop. 2004; An Alan R. Apt book

Issariyakul, Teerawat, Hossain, Ekram, (2009) *Introduction to Network Simulator NS2*

ISBN: 9780387717593

New York : Springer, cop. 2009

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://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.