Linnæus University

Course syllabus

Faculty Board of Science and Engineering
School of Computer Science, Physics and Mathematics

2ED023 Datakommunikation, 7,5 högskolepoäng
Data Communications, 7.5 credits

Main field of study
Electrical Engineering

Subject Group
Computer Science

Level of classification
First Level

Progression
G2F

Date of Ratification
Approved by Organisational Committee 2009-08-11

The course syllabus is valid from spring semester 2010

Prerequisites
At least one year of study within the field of Electrical and Computer Engineering (60 higher education credits) including Telecommunication 7,5 higher education credits (1ED042) or the equivalent.

Expected learning outcomes

Upon completion of the course, the student should know and be able to describe:

- basic principles of data communication
- different technologies for LAN, Local Area Networks and WAN, Wide Area Networks, and for different variants of Ethernet
- the OSI reference 7-layer model and the corresponding TCP/IP 5-layer model
- principles and functions of the most common different protocols in TCP/IP

Upon completion of the course, the student should be able to:

- calculate CRC, Cyclic Redundancy Check and have knowledge how to do the calculations manually
- calculate and solve problems with the Nyquist formula and the Shannon formula for bit rate capacity
- do subnet division of IP-net, both with classful and class-less addressing

Content

The course comprises the following topics:

Overview, introduction - introduction to data communication - general about the OSI model

- standards
- general about TCP/IP

Physical layer and transmission media

- propagation delöay
- transmission delay
- signal to noise ratio
- Shannon and Nyquist

Data link layer

- HDLC
- Ethernet
- Token Ring, FDDI
- wireless net
- bridges, switches
- error control, CRC, check sum
- Frame Relay, ATM

Network layer

- IP, Internet Protocol
- addressing
- routing

Transpor layer

- process-to-process
- TCP
- UDP
- flow control

Applikation layer

- DNS
- E-mail
- WWW, HTTP
- SNMP
- Multimedia

Security

- encryption
- network security
- fire walls

Type of Instruction

Lectures, practicals and/or written reports. Writing reports and participation in practicals is mandatory.

Examination

The course is assessed with the grades U,3,4 or 5.
On request, students may have their credits translated to ECTS-marks. Such a request

must be sent to the examiner before the grading process starts.
Assessment of the students performance is made through written reports and written examination.
Students who do not pass the regular examination are given the opportunity to do a resit examination shortly after the regular examination.

Course Evaluation

A written course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The course evaluation will be filed at the department.

Other

Upon request, a Swedish University course certificate will be awarded upon successful completion of the course.

Required Reading and Additional Study Material

Required reading