



Course syllabus

Faculty of Technology

Department of Physics and Electrical Engineering

1ED044 Introduktion till tele- och datakommunikation, 7,5 högskolepoäng

Introduction to tele and data communications, 7.5 credits

Main field of study

Electrical Engineering

Subject Group

Electrical Engineering

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved by Faculty of Technology 2013-08-19

The course syllabus is valid from spring semester 2014

Prerequisites

Electronics 7.5 credits (1ED041) or the equivalent.

Objectives

The course gives an introduction to the large field of tele- and data communications. By combining previously acquired knowledge of primarily mathematics and electronics the student is expected to understand how these subjects are combined in the description of a large system.

After completing the course, students should be able to describe:

- fundamental principles of radio communication and modulation
- basic principles of data communication
- different techniques for LAN, local area network or WAN, wide area network, and different variants of Ethernet
- OSI reference model with 7 layers and the corresponding TCP / IP model with 5 layers
- principles and functioning of the main protocols in TCP/IP stack, layer 1 - 4.
- describe the principles for error detection and make calculations with CRC, Cyclic Redundancy Check
- perform calculations with Nyquist formula and Shannon's formula for transmission
- do subnet dividing of IP networks with classfull addressing and classless addressing

Content

The course comprises the following topics:

- Introduction to Fourier series and spectra
- Amplitude modulation
- Frequency and phase modulation
- Basic principles of data communications
- Different technologies for LANs, Local Area Networks and WANs, Wide Area Networks
- Different variants of Ethernet in the LAN and WAN
- OSI reference model with 7 layers and the corresponding TCP/IP model with 5 layers
- Function and principles of various protocols in layers 1-4

Type of Instruction

Lectures, tutorials and mandatory laboratory sessions.

Examination

The course is assessed with the grades U,3,4 or 5.

Assessment is done through practicals and a written exam.

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.

Course Evaluation

A course evaluation will be carried out and compiled after the course is completed. The compilation will be presented to the current board as well as to the students and filed by the coordinating department.

Required Reading and Additional Study Material

Required reading

Svärdström A., Modulation och teleteknik, 2nd Ed., Studentlitteratur, 1996. Pages 120 (400)

Behrouz A Forouzan, Data Communications and Networking, Global Edition, 5th edition, McGraw-Hill Higher Education, 2012. Pages 400 (1156)