SF1635 Signals and Systems, part I 7.5 credits

Signaler och system, del I

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for SF1635 valid from Autumn 2010

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Mathematics, Technology

Specific prerequisites

SF1624, SF1625, SF1626 or equivalent. Some experience of Matlab.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course you should

- be able to use generalized functions to describe signals,
- be able to represent periodic continuous-time signals with Fourier series,
- be able to determine the Fourier and Laplace Transforms of generalized functions,
- know about the most important properties of these transforms,
- be able to describe the frequence properties of signals,
- be able to describe the properties of sampled continuous-time signals,
- have some practice in using Matlab to analyse signals,
- be able to solve linear and systems of linear equations in case the coefficients are constant
- be able to solve separable and linear ODEs of order 1 with standard methods.

Course contents

Signals and generalized functions. Fourier series. Fourier Transform of continuous-time signals. Sampling of continuous-time signals. LTI-system. Laplace transforms. Existence and unicity of solutions of ODEs and system of ODEs.

Methods to solve linear and separable ODEs of order 1 and for systems with constant coefficients.

Course literature

Zill-Cullen/Differential Equations with Boundary-Value Problems

Exempelsamling till Signaler och system I

Råde-Westergren/Mathematics Handbook for Science and Engineering.

Examination

- TENA - Examination, 6.8 credits, grading scale: A, B, C, D, E, FX, F
- LABA - Assignment, 0.7 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

One written examination (TEN1; 6,8 cr)
One homework problem (LAB1; 0.7 cr).

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.