FSD3140 Signal Analysis 5.0 credits

Signalanalys

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

Establishment

Course syllabus for FSD3140 valid from Autumn 2018

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Courses in mathematics on master level including Fourier analysis and Laplace transforms.

Language of instruction

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

Intended learning outcomes

The student should after finishing the course be able to:

- Use a signal analyser (FFT-analyser) and be able to choose the measurement setup: frequency range, length of time record, time windows, number of averages etc.
- Perform signal analysis on measured time record in Matlab.
- Choose appropriate signal analysis methodology for a given problem. For example choosing between time or frequency domain analysis, one-channel or multi-channel analysis, different types of filtering etc.
- Interpret results from different types of signal analysis, for instance spectra, correlation functions or frequency response functions.
- Be able to extract information about the character of the studied signal such as periodicity, time delays and linearity.

Course contents

Contents: Amplitude characterization, DFT, FFT, signals and linear systems, correlation, power spectral density, spectrum analysis with FFT. z-transform and digital filters, frequency analysis with filters, applications.

Disposition

Lectures

Home assignments

Course literature

Signals and Mechanical Systems, H. Boden, K. Ahlin and U. Carlsson.

Additional handouts.

Examination

- TEN1 - Exam, 2.5 credits, grading scale: G
- INL1 - Assignment, 2.5 credits, grading scale: G

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

Home assignment.

Written or oral exam.

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.