FSD3141 Engineering Applications of Signal Analysis 7.5 credits

Tillämpad signalanalys

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

Establishment

Course syllabus for FSD3141 valid from Autumn 2018

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

A basic course in signal analysis and courses in mathematics on the 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 probability functions and amplitude measures to analyze and characterize signals.
- Apply correlation and spectral density techniques in sound and vibration problems.
- Understand how to use single-input / single-output relations for system identification, including the effect of additional noise disturbances and correlated inputs.
- Be able to choose an appropriate system identification technique and to estimate random and bias errors in frequency response estimates.
- Be able to choose appropriate signal analysis techniques for propagation-path identification.
- Be able to use single -input / multi-output relations for sound and vibration applications.
- Be able to use multi -input / multi-output relations fOr sound and vibration applications.
- Be able to use energy-source identification techniques including coherent output spectra.
- Be able to estimate statistical errors in estimates of different types of spectra and functions.

Course contents

Signal analysis with focus on sound and vibration applications.

Contents: Probability functions and amplitude measures, correlation and spectral density, single-input / single-output relations, system identification and response, propagation-path identification, single -input I / multiple-output relations, multiple -input /multiple-output relations , energy-source identification, statistical enors in estimates.

Disposition

Course seminars and home assignments.

Course literature

Engineering Applications of correlation and spectral analysis. J.S. Bendat and A.G. Piersol

Examination

- TEN1 - Examen, 3.5 credits, grading scale: G
- INL1 - Assignment, 4.0 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

Active participation in course seminars.

Home assignments.

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.