



EQ2830 Detection and Modulation Theory, Accelerated Program 7.5 credits

Detekterings- och modulationsteori, forskarförberedande

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

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

Establishment

Course syllabus for EQ2830 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

General admission requirements

Language of instruction

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

Intended learning outcomes

This course provides an introduction to the fundamentals of detection theory with applications to digital communications. The course also covers the basics of estimation theory and the design of modulation signal waveforms.

Course contents

A brief outline is as follows:

- Classical estimation and detection theory, discrete-time/vector models
- Representation of continuous-time stochastic processes
- Detection of signals, continuous-time waveforms
- Estimation of signal parameters
- Gaussian signals in AWGN
- Detection of random processes in noise
- Estimating the parameters of a random process

Two versions: The course is eligible for undergraduate, master and doctoral students. There will be two versions:

- 2E1434: An accelerated program (forskarförberedande) version, 5 cu's
- F2E5634: A Ph.D. student version, 8 cu's

Course literature

The course is based on the two classic volumes

- H. L. Van Trees, "Detection, Estimation and Modulation Theory," Part I (Wiley: paperback ISBN 0-471-095176)
- H. L. Van Trees, "Detection, Estimation and Modulation Theory," Part III: Radar-Sonar Signal Processing and Gaussian Signals in Noise (Wiley: paperback ISBN 0-471-10793-x)

The accelerated program version of the course uses only Part I while the Ph.D. student version uses both parts.

Examination

- TEN1 - Examination, 7.5 credits, grading scale: A, B, C, D, E, FX, 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.

Other requirements for final grade

The main focus is on extensive homework problems that must be handed in according to a schedule.

The accelerated program version will in addition include an 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.