



# HF1011 Signals, Systems and Transforms 8.0 credits

Signaler, system och transformer

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 HF1011 valid from Autumn 2024

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

Calculus in one variable and linear algebra (HF1008) or corresponding

## Language of instruction

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

# Intended learning outcomes

After completing this course, students should demonstrate competency in the following skills:

- Define and interpret the fundamental concepts of systems, signals and models
- Set up mathematical models of signals and systems
- Describe and analyse continuous time discrete time signals and systems in the time- and frequency domain
- Understand and use the concepts of stability and performance
- Understand the concepts of sampling, discretisation and alias

# Course contents

- Differential equations and difference equations
- Fourier series, the Fourier transform, the Laplace transform and the Z transform
- State space models and transfer functions in the time and frequency domain
- Fundamental properties of linear systems in the time and frequency domain
- Mathematical models of physical systems and signals
- Sampling, discretisation and the alias effect
- Modeling and simulation with MATLAB / Simulink

# Examination

- LAB1 - Laboratory, 2.0 credits, grading scale: P, F
- TEN1 - Examination, 6.0 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.

# 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.