

SYLLABUS

Signal analysis 7.5 credits

S0001E

Signalanalys

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2021-02-17

Signal analysis 7.5 credits S0001E

Signalanalys

First cycle, S0001E

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Signalbehandling	Computer Technology

Main field of study

Computer Science and Engineering

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and courses of at least 60 credits at first cycle including the following knowledge/courses: M0018M Linear analysis, M0048M Linear Algebra and Calculus, and or M0049M Linear Algebra and Differential Equations, or equivalent.

Selection

The selection is based on 1-165 credits.

Course Aim

The student should be able to - Derive and describe the frequency content of a signal - Derive and describe how a linear and time-invariant (LTI) system affects input signal both in time and frequency - Implement and simulate LTI systems - Derive, describe, and simulate how the placement of poles and zeros affect the properties of a system both in time and frequency - Determine if a certain continuous-time signal can be sampled without loss of information.

Contents

An in-depth coverage of linear time invariant systems and the supporting mathematical theory. The course covers: - Fourier series - Fourier transform (both continuous and discrete time) - Sampling and reconstruction - Discrete-time processing of continuous-time signals - Z-transform - Analysis of LTI systems through poles and zeros Mandatory computer assignments in Matlab is part of the course

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures, problem solving sessions, and take home labs

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Written exam with marks U,3,4,5, and approved labs.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Overlap

The course S0001E is equal to S0004E, SMS028

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Laboratory work	U G#	1.5	Mandatory	A07	
0003	Written exam	G U 3 4 5	6	Mandatory	A21	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Jonny Johansson, HUL SRT 2021-02-17

Syllabus established

by Department of Computer Science and Electrical Engineering 2007-02-28