IL2239 Analog-Digital Interfaces 7.5 credits

Analoga-digitala gränssnitt

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

Establishment

Course syllabus for IL2239 valid from Spring 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Basic knowledge in electronics and signal processing is required.

Language of instruction

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

Intended learning outcomes

The aim of the course is to provide an understanding of and experience in concepts, analysis, design and test of analog-digital interfaces for a wide range of applications. Experience in design methods and design flows as well as tools to test analog-digital interfaces is also acquired.

After the course, the students should be able to:

- explain the basic design concepts for analog-digital interfaces
- apply knowledge in analysis, simulation, design, and test of interfaces and their building blocks
- identify critical parameters that influence the performance of analog-digital interfaces
- select and design the most appropriate analog-digital interface architecture for a specific application.

Course contents

The main theme of this course concerns concepts, analysis and test of analog-digital interfaces and their building blocks such as:

- sample/hold circuits and active filters for signal conditioning
- analog-digital and digital-analog converters
- performance metrics for data converters
- Nyquist rate and oversampling analog-digital and digital-analog converters
- design and testing methodologies

Course literature

Behzad Razavi, "Principles of Data Conversion System Design" IEEE Press.

David A. Johns, Ken Martin, "Analog integrated circuit design", Wiley & Sons, Inc.

Examination

- INL1 - Assignments, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project, 4.5 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.

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

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.