IL1332 Digital Systems Design using Hardware Description Languages 7.5 credits

Digital systemdesign med hårdvarubeskrivande språk

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

Establishment

The official course syllabus is valid from the autumn semester 2026 as decided by the director of first and second cycle education. Decision date: 2026-04-10

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Knowledge in digital design, 6 credits, equivalent to completed course IE1205/IE1204/HE1026.

Intended learning outcomes

After passing the course, the student should be able to

- design digital systems to fulfill given functional requirements
- model and simulate digital systems in hardware description languages (HDL)
- synthesize digital systems and analyze results using EDA tools targetting field programmable gate arrays (FPGAs).

Course contents

The course teaches digital systems design using hardware description language. Additionally, the course includes simulation and synthesis of digital systems designs targeting FPGAs.

- Review of elementary digital design concepts and their modeling in HDL.
- Review of sequential elements, timing concepts, and their applications. Modelling in HDL.
- Design of finite state machines (FSMs) and datapaths.
- Modeling of FSM and datapaths in HDL.

Examination

- LAB1 - Laboratory work, 3.0 credits, grading scale: P, F
- TENA - Digital exam, 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.