IL2200 ASIC-design Methodology with High-level Languages 7.5 credits

ASIC-design metodik med hårdvarubeskrivande språk

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

Establishment

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

IL2217 or similar.

Language of instruction

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

Intended learning outcomes

After the course the student shall be able to
- describe the different phases of the design flow for digital ASICs
- explain how non-functional design constraints affect the design process
- categorize different types of ASICs and explain their technology
- explain how hardware description language patterns are realized in hardware
- introduce extra hardware in order to improve the testability of a design
- name and explain techniques for the test and verification of a design
- control the design process by assigning constraints and properties in order to yield an efficient implementation of a design
- write a design specification using a hardware description languages in such a way that it can be efficiently implemented in an ASIC
- apply techniques to analyze the timing of the final implementation

Course contents

- ASIC design flow
- ASIC technologies
- Classification and specification constraints for logic synthesis
- Static timing analysis
- State machine synthesis
- Test and verification
- Low power design and logic synthesis
- Design for testability
- Technology mapping
- Physical design issues

Course literature

The course book is announced on the course web page one month before course start.

Examination

- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Course, 3.0 credits, grading scale: P, 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.

Grading scale: A/B/C/D/E/Fx/F

Other requirements for final grade

Written exam, 4.5 hp (TEN1: Grade A-F)
Laboratory course, 3.0 hp (LAB1: Grade P, F)

The grade of the written exam (TEN1) is also the final grade of the course.

The lab course must be completed during the study year. If the course is not completed during the study year old laboratories are not counted anymore.

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.