



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

IC-projekt 2

IC-project 2

ETIN40, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED E

Date of Decision: 2023-04-11

General Information

Compulsory for: MSOC2

Elective for: D5, E4-is

Language of instruction: The course will be given in English

Aim

The aim is to provide knowledge about practical verification of integrated circuits, with an emphasis on system-on-chip. The circuits to verify are designed by the students in the course IC-project, and can be either analog, digital, computer oriented, or mixed mode, and the design work can be performed on either transistor or block level.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- have knowledge about modern CAD-tools for integrated circuit design
- understand the design process from specification to finished circuit
- have knowledge about modern verification methods and measurement equipment
- understand why simulated and measured performance differ

Competences and skills

For a passing grade the student must

- be able to verify an integrated circuit
- be able to make a time plan according to a given time frame
- be able to present his/her results in oral as well as written form

Judgement and approach

For a passing grade the student must

- feel familiar in a modern design environment for integrated circuits
- be able to read and understand a specification and to handle the design process all the way to a finished and verified integrated circuit

Contents

The course provides the students an opportunity to verify a complete chip from the course IC-project. The verification is performed by measurements, and it is important to measure several different properties of the circuits and understand the reason for differences between simulated and measured behavior. If the design of the student has been selected for fabrication he/she will verify his own circuit. Otherwise an already existing circuit can be verified. In special cases digital designs can be implemented and verified using FPGA (Field Programmable Gate Array). The requirements on design complexity and volume of the report will in those cases be increased. The result of the verification is presented in a report, which is also presented orally.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Verification of integrated Circuits, designed by the students in the course IC-Project 1. The grade is based on the quality of the work as well as the report and oral presentation of the work. The work is performed in groups and an assessment is made of the efforts of the group as well as the individual participants. If the work is not finished within the given time frame, a higher grade than 3 can not be given.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0115. **Name:** Verification.

Credits: 7,5. **Grading scale:** TH. **Assessment:** Verification of integrated Circuits, designed by the students in the course IC-Project 1.

Code: 0215. **Name:** Report.

Credits: 0. **Grading scale:** UG. **Assessment:** Written report and oral presentation of the work.

Admission

Admission requirements:

- For digital projects; home assignments part of ETIN35 IC project 1. For other projects; ETIN35 IC project 1

The number of participants is limited to: No

The course overlaps following course/s: ETI210, ETIN01

Reading list

- Course material will be available on the homepage of the course.

Contact and other information

Course coordinator: Joachim Rodrigues (digital och dator), joachim.rodrigues@eit.lth.se

Course coordinator: Baktash Behmanesh, baktash.behmanesh@eit.lth.se

Course homepage: <http://www.eit.lth.se/course/etin40>