HE1026 Digital Electronics 6.0 credits

Digitalteknik

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

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

Establishment

Course syllabus for HE1026 valid from Autumn 2017

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

General entrance requirements. - successful completion of upper secondary education, knowledge of Swedish and English

Language of instruction

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

Intended learning outcomes

This course will provide a knowledge of fundamental digital design and systematic methods of analysis and design of digital systems and provide basic knowledge of how digital building blocks are described in a hardware description language VHDL.
The student will after the course be able to:

• convert between different number systems and describe some different codes.
• explain the function of basic digital combinatorial circuits and sequential circuits.
• analyze and construct both combinational and sequential networks.
• describe the behavior of digital components by using hardware description languages.
• using computer tools to simulate the description of a digital system and realize the system in different types of programmable logic device.
• make constructions, testing and debugging of digital networks.
• collect and interpret information from data sheets and other information sources.
•describe the function, characteristics and structure of different memory systems.
• describe different types of programmable logic devices

Course contents

• Number Systems and Codes
• binary arithmetic
• logical operators, electronic gates and fundamental circuits.
• Boolean algebra
• combinatorial circuits
• sequential network
• hardware descriptive language VHDL.
• programmable circuits
• storage devices D-Latch D- flip flop, Memory

Course literature

Digitalteknik, Per Carlsson & Staffan Johansson, ISBN 9789144093727

Kursbunt

Examination

• LAB1 - Laboratory Work, 4.0 credits, grading scale: A, B, C, D, E, FX, F
• TEN1 - Examination, 2.0 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.

Passed written exam, (TEN1, 2 cr. ECTS) grade scale: A, B, C, D, E, FX, F

Approved lab work, (LAB1; 4 cr. ECTS) grade scale: A, B, C, D, E, FX, F

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.