HE1021 Computer Engineering 7.5 credits

Mikrodatorteknik

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

Establishment

Course syllabus for HE1021 valid from Spring 2009

Grading scale

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

Education cycle

First cycle

Main field of study

Electrical Engineering, Technology

Specific prerequisites

Basic knowledge from Digital Electronics and basic knowledge in C programming.

Language of instruction

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

Intended learning outcomes

The main purpose of the course is to provide good knowledge about the design, function, programming and use of embedded systems.

After completing the course, the student should be able to:

- explain the function and design of a microcomputer system.
- explain the function and use of peripheral interfaces.
- explain how the different parts in microcomputer system communicate with each others.
- program a microcomputer system both in high-level and low-level languages.
- use development tools for programming and debugging embedded systems.
- explain different principles for computer architecture.
- explain and use interrupt handling with multiple interrupt levels.

Course contents

- Computer models: von Neumann and Harward architecture, CISC and RISC.
- Memory models: hierarchical memories, virtual memories and cache memories.
- The function of a microprocessor on registry level.
- The microprocessor's signal names and function.
- Exception processing in hardware and software.
- Parallel and serial interfaces.
- Timers and other advanced peripheral adapters.
- Structured programming.
- Assembly language programming.
- Hardware oriented programming in C.

Examination

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