



DD221V Low Level Programming and Computer Architecture 7.5 credits

Maskinnära programmering och datorarkitektur

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 DD221V valid from Spring 2009

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

- Mathematics D or equivalent and
- 15 university credits and
- documented proficiency in Swedish and English A or equivalent.

Language of instruction

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

Intended learning outcomes

The goal of this course is to give the students knowledge about

- how data and computer programs are stored on the computer
- how computer programs are executed on different levels
- how computers interpret and execute machine code
- how computers are constructed so that the students will be able to write efficient computer programs that use the computer's architecture.

Course contents

Different forms of data and how they are represented in the computer: numbers, text and computer programs.

Machine code and assembler programming.

The architecture of computers. CISC and RISC.

Pipelining, out-of-order processing and related problems.

The memory hierarchy from register to hard disk.

C programming in general but especially optimization on the word and bit level.

Exercise in using disassembler, debugger etc.

Course literature

R. E. Bryant och D. O'Hallaran: Computer Systems a Programmer's Perspective, Prentice Hall.

Examination

- LAB1 - Laboratory Work, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB2 - Laboratory Work, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 1.5 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.

Other requirements for final grade

Laboratory assignments (LAB1; 2 cr.) (LAB2; 2 cr.) and examination (TEN1; 1 cr.).

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.