IL2206 Embedded Systems 7.5 credits

Inbyggda System

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

Establishment

Course syllabus for IL2206 valid from Autumn 2008

Grading scale

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

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

The course requires
- good knowledge of an imperative programming language like C/C++ or Java
- good knowledge of computer hardware corresponding to the course IS1200 Computer Hardware Engineering

Language of instruction

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

Intended learning outcomes

After finishing the course the student shall be able to

- describe the special requirements that are imposed on embedded systems

- describe the key properties of microprocessor and digital signal processor

- sketch a design of an embedded system around a microprocessor or DSP

- explain how microprocessor, memory, peripheral components and buses interact in an embedded system

- evaluate how architectural and implementation decisions influence performance and power dissipation

- produce efficient code for embedded systems

- point out the role of the compiler in the embedded system design process

- summarize the basic properties of a real-time operating system

- estimate if additional hardware can accelerate a system

Course contents

Embedded systems design process

- Properties of microprocessor and DSP as design components

- Embedded computing platform: memory hierarchy, busses and peripheral devices

- Design constraints: low power, speed, memory size, real-time behavior

- Design analysis and optimization of embedded software

- Introduction to real-time operating systems

- Acceleration of a system by means of additional hardware

Course literature

Computers as Components - Principles of Embedded Copmuting System Design, Wayne Wolf
Upplaga: Förlag: Morgan Kaufmann År: 2001
ISBN: 1-55860-693-9

Examination

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

Other requirements for final grade

Written exam (TEN1: Grade A-F)
Laboratory course (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.