IS1330 Real Time Systems 6.0 credits

Realtidssystem

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 IS1330 valid from Autumn 2008

Grading scale

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

Education cycle

First cycle

Main field of study

Electrical Engineering,Technology

Specific prerequisites

advanced course in programming
c-programming
embedded systems

Language of instruction

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

Intended learning outcomes

To give the student the primary knowledge to be able to design a real-time system.
Thus for a passed grad the student should be able to:

- summerize a design method for a real-time system
- explain how to handle exceptions and how to design reliable real-time systems.
- apply concurrent programming by using operating systems, programming languages and software libraries.
- apply methods for handling critical sections in a system with parallel processes.
- explain the primary characteristics and the main functionality of a RTOS .
- explain different methods for scheduling of processes and make utilization-based schedulability tests.
- identify suitable transducers for a specific case and use them in a real-time system

For a higer grade (D-A) shall the student also be able to:

- apply a design method for a real-time system
- effeciently use all parts of a real-time operating system
- apply methods for exception handling and design a reliable real-time system
- design a real-time system which fulfills specific timing requirements.

Course contents

Requirement specifikation, UML, programming languages, concurrent programming, reliability, fault-tolerance, hardware for real-time systems, optimization methods, transducers, RTOS, CASE-tools, cross compiling.

Course literature

Real-Time Systems and Programming Languages, Burns, A. och A. Wellings
Upplaga: 3:e Förlag: Addison Wesley År: 2001
ISBN: 0-201-72988-1

Suggested reading:
Labrosse J., MicroC/OS-II,
The Real-Time Kernal, 2nd ed.,
CMP Books, 2002

Examination

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

- TEN1 - Examination, 3.0 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.

Other requirements for final grade

Grading scale: A/B/C/D/E/Fx/F

Written exam TEN1: 3 hp, Grade A-F
Labratory work LAB1: 3 hp, Grade A-F
The grade for the course is calculated as a weighted average where the grade E-A are given the value 1-5. Half values are rounded up.
The labratory work kan only be made during the course

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.