



# IL2212 Embedded Software 7.5 credits

Programvara för inbyggda system

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 IL2212 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

## Language of instruction

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

# Intended learning outcomes

After the course the student shall be able to

- describe the special character of embedded software
- categorise and describe the different layers in the software architecture of embedded systems
- describe the structure of a real-time operating system and explain its architecture and elements
- design embedded software in such a way that non
- functional constraints are fulfilled by the system
- apply different scheduling algorithms and identify their limitations
- describe the design process of embedded software
- describe selected methods to verify/test the functionality of an embedded system
- name program languages for the design of embedded systems and describe their characteristics.

## Course contents

The course will cover the following topics:

- Requirements on embedded software
- Hardware abstraction and layered software architecture
- Hard- and soft real-time
- Single processor: scheduling and resource access
- Multiprocessor: scheduling, resource access and synchronization
- Real-time operating systems
- Embedded software design process

The theoretical part is supported by laboratories, which shall deepen the understanding of important concepts.

## Course literature

Jane W. S. Liu: Real-Time Systems, Prentice Hall

## Examination

- LAB1 - Laboratory Work, 4.5 credits, grading scale: P, 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

Passed written exam (TEN1, 3,0 credits) and passed laboratory course (LAB1, 4,5 credits).

## 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.