



# FIL3008 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 FIL3008 valid from Spring 2011

### Grading scale

### Education cycle

Third cycle

### Specific prerequisites

The course requires good knowledge of the design of embedded computer systems, comparable to the course IL2206 Embedded Systems.

### 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

- have a good understanding of the special character of embedded software
- understand to what extent the predictability of embedded software depends on the underlying hardware architecture
- be able to distinguish and evaluate different mechanisms for inter-process communication
- be able to model an embedded software application so that it can be analyzed with respect to real-time behavior
- be able to use different techniques to analyze if a software application meets its deadline
- be able to model and analyze the effect of shared resources
- be able to recognize restrictions of idealized models and scheduling algorithms and to take practical factors into account
- understand the mechanisms of a real-time operating system and be aware of their impact on development of embedded software
- be able to evaluate different languages and approaches to embedded software design
- be able to study scientific articles in the topic area and to apply novel ideas to own research problems

## Course contents

- Requirements on embedded software
- Prerequisites for the development of predictable embedded software
- Inter-process communication
- Hard- and soft real-time systems
- Modeling real-time systems
- Schedulability analysis
- Modeling and analyzing systems with shared resources
- Aperiodic and sporadic jobs
- Multiprocessor real-time systems
- Real-time operating systems
- Languages and models for the design of predictable embedded software

## Disposition

## Course literature

To be decided at course start

## Examination

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.

## 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.