

Embedded Systems Design

Konstruktion av inbyggda system
4 credits

Programme course

TDDI08

Valid from: 2024 Spring semester

Determined by	Main field of study	
Board of Studies for Computer Science and Media Technology	Computer Science and Engineering	
Date determined	Course level	Progressive specialisation
2023-08-31	First cycle	G2X
Revised by	Disciplinary domain	
	Technology	
Revision date	Subject group	
	Computer Technology	
Offered first time	Offered for the last time	
Spring semester 2007		
Department	Replaced by	
Institutionen för datavetenskap		

Course offered for

- Bachelor of Science in Computer Engineering
- Bachelor of Science in Engineering Electronics

Prerequisites

Basic courses in computer architectures, programming.

Intended learning outcomes

The aim of the course is to address the particular problems concerning the design of complex embedded systems. Modern design methodologies are presented with an emphasis on early design phases, such as modeling, verification and system-level synthesis, not covered by traditional methods.

After completing the course, the students should be able to:

- Apply modern system-level methods and tools for the design of real-time embedded systems.
- Use modern modeling, verification and simulation tools in the context of system-level design.
- Analyze the particular features of the application and select the most appropriate modeling approach.
- Evaluate the implications of system level design decisions, regarding system architecture, task scheduling and mapping, on the final system performance, cost, and power consumption.
- Describe the complex interactions between hardware architecture and software implementation.
- Perform design space exploration using a system-level simulation environment.

Course content

Embedded systems and their design, Design flow, Specification and modeling of embedded systems, Simulation and estimation, Architectures for embedded systems, Mapping and scheduling.

Teaching and working methods

The course consists of a series of lectures, lesson and laboratory exercise.

Examination

DIT1	Digital examination	2.5 credits	U, 3, 4, 5
LAB2	Laboratory work	1.5 credits	U, G

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is “Swedish”, the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- If teaching language is “Swedish/English”, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

Other

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

The course is campus-based at the location specified for the course, unless otherwise stated under “Teaching and working methods”. Please note, in a campus-based course occasional remote sessions could be included.