



# IS1300 Embedded Systems 7.5 credits

## Inbyggda system

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

## Establishment

The official course syllabus is valid from the autumn semester 2022 in accordance with Head of School decision: J-2022-0593. Decision date: 21/03/2022

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

- Knowledge and skills in programming, 6 higher education credits, equivalent completed course ID1018/DD1310/DD1311/DD1312/DD1314/DD1315/DD1316/DD1318/DD1331/DD100N.
- Knowledge in computer engineering, 7.5 higher education credits, equivalent completed course IS1200.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course.

Registering for a course is counted as active participation.

The term 'final examination' encompasses both the regular examination and the first re-examination.

## Language of instruction

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

## Intended learning outcomes

On successful completion of the course, the student should be able to:

- describe the design process for an embedded system
- interpret requirements and write specification
- create architecture for both hardware and software
- describe the structure of a microcontroller
- describe how I/O ports are used for external signals and communication between circuits
- compare and analyse different ways to manage real-time problems
- implement the software based on a given problem
- give examples of hard and soft real-time issues
- describe common methods for scheduling of processes and describe how communication between processes can be carried out
- use real-time operating system to implement a program in a time-critical embedded system
- plan, design and carry out a strategy for testing
- write a report to document a system.

## Course contents

Labs to become familiar with software and hardware.

The course is carried out by means of computer-based tools.

Examples of different kinds of microprocessors and operating systems.

Examples of interface and communication.

Programming environments, programming language and programming.

System tools and system design.

Real-time consequences.

## Examination

- PRO1 - Project Assignment, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- TENB - Oral exam, 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.

## 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.