



# EL2222 Systems and Control in Practice 1.5 credits

## Systemteknik i praktiken

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 EL2222 valid from Autumn 2014

## Grading scale

P, F

## Education cycle

Second cycle

## Main field of study

Electrical Engineering

## Specific prerequisites

Students admitted to the masters program Systems, Control and Robotics

## Language of instruction

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

## Intended learning outcomes

After completing the course, the students should:

- have experience from working with embedded systems close to the hardware
- have a holistic overview of the concepts from the core course of the program
- have reflected on her/his own knowledge and learning in a system perspective and have planned for what new knowledge to acquire and how

Further goals of the course are to

- constitute a meeting place for students within the program Systems, Control and Robotics to strengthen their network and create a forum for collaboration
- create a context within which the students can practice programming

## Course contents

The main content of the course is practical experience in working with input and output signal on real world systems. In the course embedded systems will be used where the control unit will be a platform such as the Raspberry Pi. The course will highlight aspects from several of the core courses in the program such as control, estimation and sensor data processing. The course will in this way give the students an overview and better understanding for how content from different courses fit together and the difficulties that comes with turning theory into practice. Furthermore, the student will be able to identify strengths and weaknesses within the subject areas and plan for how to acquire more knowledge where needed.

## Disposition

The course run in the form of practical laborations where the student works hands-on in a group with design, implementation and analysis of systems. This practical work is conducted on a platform such as the Raspberry Pi, which has been developed for educational purposes and, which exposes the hardware. The goal is that input signals should come from real sensors as far as possible and the output signals should control real actuators to highlight problems such as noise and limitations in control signals. The tasks will require the students to program and they will gain experience in choosing an appropriate programming language for a certain task.

## Course literature

Ingen kurslitteratur specifikt för kursen

No specific course literature for the course

## Equipment

Material to complete the laboration assignments will be provided.

## Examination

- LAB1 - Practical experience in systems and control, 1.5 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.

The course is run in the form of laborations which require active participation.

## Other requirements for final grade

Active participation in the laborations or corresponding own work if attendance is not possible (e.g. during exchange studies).

## 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.