



# EL2421 Automatic Control, Project Course 15.0 credits

Reglerteknik, Projektkurs

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 EL2421 valid from Autumn 2018

## Grading scale

P, F

## Education cycle

Second cycle

## Main field of study

Electrical Engineering

## Specific prerequisites

Automatic Control, Basic Course, (EL1000, EL1110, E1120, Reglerteknik allmän kurs) and passed grade in at least one of EL2450, EL2520, EL2620, EL2700, EL2805

## Language of instruction

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

## Intended learning outcomes

The overall purpose of the course is to give the student practical knowledge and experience of project work in design and implementation of complex control systems. The students get to consolidate their previously acquired knowledge in control theory by solving a real problem on a laboratory system. There is a large focus on independent and self-organized project work. The student also gets experience in project management and technical communication.

After the course the student should have the ability to:

- work effectively in a larger project group to solve a complex design task
- analyse and specify requirements of a complex control problem from a systems point-of-view
- structure and plan the project work and formulate and follow a project plan
- systematically design, implement, test and demonstrate a prototype control system that meets given specifications
- use adequate engineering tools and methods and acquire new knowledge and skill when needed
- pursue own ideas and realize them in practice
- document and communicate results in writing, orally and graphically

## Course contents

The majority of the work is project work in a group of 6-10 students, dealing with:

- project planning
- requirements specification
- control design
- modeling and simulation
- implementation of real-time control systems
- validation and testing
- communication, documentation and demonstration

There will also be a number of compulsory workshops/tutorials, for example on:

- project management
- development tools (LabView/xPC target/...)
- systems engineering
- technical communication

Compared with the smaller course EL2425, this course gives further training in:

- working in a large project group

- organization and planning of complex project
- systems design and system integration

## Course literature

No specific list is given. The students are expected to find the necessary information themselves. Some background material, manuals and other documentation will be available, depending on the nature of the project task.

## Examination

- PRO1 - Project, 15.0 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.

PRO1 - Project, 15.0 hp, grade scale: P, F

## Other requirements for final grade

The fulfilment of the course goals are examined by

- weekly project meetings
- written requirement specification
- documented project plan
- half-time presentation
- final presentation and demonstration
- final report and documentation
- web page and short movie
- self-evaluation

## 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.