



EL2620 Nonlinear Control 7.5 credits

Olinjär reglering

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

On 04/21/2020, the Head of the EECS School has decided to establish this official course syllabus to apply from autumn semester 2020, registration number: J-2020-0536.

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

For students on independent course: 120 credits and documented English B or the equivalent.

Language of instruction

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

Intended learning outcomes

After passing the course, the student should be able to

- formulate theory and definitions of important concepts in nonlinear control systems
- apply theory and methods within nonlinear control.

Course contents

The course treats control theory for nonlinear dynamic systems:

- analysis of input-output stability by means of e.g. the small gain theorem and the circle criterion
- analysis of stability of equilibrium points through linearization and Lyapunov methods
- analysis of stability for passive systems
- design and analysis of feedback control for nonlinear systems through linearization, feedback linearization and Lyapunov based methods
- design and analysis of high gain feedback, e.g. sliding mode control
- observers for nonlinear systems
- setpoint regulation control and setpoint tracking
- simulation of nonlinear dynamic models.

Examination

- LABA - Laboratory Work 1, 2.0 credits, grading scale: P, F
- LABB - Laboratory Work 2, 2.0 credits, grading scale: P, F
- LABC - Laboratory Work 3, 2.0 credits, grading scale: P, F
- TENA - Examination, 1.5 credits, grading scale: A, B, C, D, E, FX, 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.

Other requirements for final grade

LABA 2.0 credits, lab 2.0 credits, LABC 2.0 credits, TEN 1.5 credits

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.