



FEL3100 Multivariable Feedback Control 12.0 credits

Flervariabel reglerteknik

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

Establishment

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Language of instruction

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

Intended learning outcomes

Course contents

The course will give a rigorous introduction to the analysis and design of linear multivariable control systems. The focus is on inherent limitations in feedback control systems and on

stability and performance in the presence of uncertainty (robustness). Important topics include: classic frequency domain methods extended to multivariable systems, directionality in MIMO systems, input-output controllability, uncertainty descriptions, linear fractional transformations, robustness analysis including the structured singular value μ , μ -synthesis, H_2 - and H_∞ -controller synthesis, H_∞ -loop shaping, linear matrix inequalities, balanced model reduction

Course literature

- Course book:
Multivariable Feedback Control - Analysis and Design, 2nd ed.
Sigurd Skogestad and Ian Postlethwaite
Wiley, 2005
ISBN 0-470-01168-8
- Supporting book:
Essentials Of Robust Control
Kemin Zhou
Prentice Hall, 1998
ISBN 0135258332

Examination

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.

Other requirements for final grade

Weekly hand-in problems and a take-home exam at the end of the course.

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.