



FSF3862 Nonlinear Systems, Analysis and Control 7.5 credits

Olinjära system, analys och styrning

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 FSF3862 valid from Spring 2019

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Ph D students in applied mathematics, and systems and control.

Language of instruction

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

Intended learning outcomes

A systematic understanding of nonlinear control systems.

This course gives an overview on nonlinear dynamical systems, presented from systems and control point of view. In this course, both analysis and synthesis techniques will be covered. Thus it is very suitable for students who want to have a basic understanding of nonlinear systems. We plan to cover a range of topics on nonlinear systems such as approximation methods, periodic solutions, Lyapunov stability, controllability and observability, feedback stabilization and output regulation.

Course contents

Nonlinear Differential Systems, Periodic Solutions, Lyapunov Stability Theory, Stability of Invariant Set and Model Reduction, Controllability and Observability of Nonlinear Systems, Feedback Stabilization, Tracking and Regulation, and Other Topics.

Disposition

14 lectures

Course literature

Compendium.

Examination

- HEM1 - Home assignment, 1.5 credits, grading scale: P, F
- TENH - Home exam, 6.0 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.

Homework plus final exam.

Other requirements for final grade

Completion of homework and passing the exam.

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.