SF2863 Systems Engineering 7.5 credits

Systemteknik

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 SF2863 valid from Autumn 2020

Grading scale

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

Education cycle

Second cycle

Main field of study

Mathematics

Specific prerequisites

Completed advanced courses in Probability theory (SF2940 or equivalent).

Language of instruction

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

Intended learning outcomes

To pass the course, the student shallbe able to do the following:

- Apply basic theory, concepts and methods within the parts of systems engineering that is described in the course contents to solve problems.
- Formulate simplified problems within the application areas described by the course contents using mathematical models and optimize these with the help of software.
- Read and understand mathematical writings on, for example, linear algebra, analysis and systems engineering, and their applications, communicate mathematical reasoning and computations within this area orally and in writing in such a way that it is easy to follow.

To receive the higher grades, the student shallin addition be able to do the following:

- Explain, combine and analyze basic theory, concepts and methods within the parts of systems engineering that is described in the course contents.

Course contents

- Basic theory for Markov chains and Markov processes
- Queueing models based on Markov processes, including models for queueing networks
- Models for inventory optimization, deterministic as well as stochastic.
- Models for optimization of spare parts
- Marginal allocation
- Dynamic programing, for recursive decision making
- Optimal control of Markov chains, for stochastic decision making.

Examination

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

Transitional regulations

Students with at least 4 bonus points on home assignments, not earlier than 2017 and at most three years old, will by passing the written exam automatically pass the home assignment part.

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.