SF2866 Applied Systems Engineering 7.5 credits

Tillämpad 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 SF2866 valid from Autumn 2020

Grading scale

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

Education cycle

Second cycle

Main field of study

Mathematics

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 shall be able to:

- Apply basic theory, concepts and methods within the parts of systems engineering that is described in the course contents to solve problems.
- Organize and collaborate in groups on projects provided by the industry or research centers, and present and explain results orally and in writing.
- Formulate mathematical models for a system, or a process, focus the scope of the model to the research questions posed in the projects, and to validate, analyze and optimize these.
- Discuss and motivate choices made on priority of aspects such as cost efficiency and sustainability.
- 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:

- Explain, combine and analyze theory, concepts and methods within the parts of systems engineering that is described in the course contents and by the selected projects.
- Make well motivated model assumptions, select suitable case studies, validate and evaluate reliability, sensitivity, implementability and consequences of results in the projects.

Course contents

The course contents will mainly be based on the following areas:

- Queueing models based on Markov processes, including models for queueing networks.
- Models for inventory optimization, deterministic as well as stochastic.
- Scheduling methods for production systems and transport systems, and route planning

Variations may occur depending on the projects selected for the current course offering.

Specific prerequisites

- Completed course in Optimization(SF1811, SF1861 or equivalent)
- Completed course in Systems Engineering (SF2863 or equivalent)

Examination

- PRO1 - Project Assignments, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Written Examniation, 3.5 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.

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.