SF1904 Markov Processes, Basic Course 3.0 credits

Markovprocesser, grundkurs

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

Establishment

Course syllabus for SF1904 valid from Autumn 2007

Grading scale

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

Education cycle

First cycle

Main field of study

Mathematics, Technology

Specific prerequisites

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 should be able to do the following:

- construct simple Markov chain models in discrete and continuous time and describe their asymptotic properties and behaviour, in particular the Poisson process
- use absorption techniques in continuous and discrete time to solve problems
- model simple queueing systems with birth and death processes and calculate theoretical quantities in these models such as expected queueing time and queue length.

To receive the highest grade, the student should in addition be able to do the following:

- Combine all the concepts and methods mentioned above in order to solve more complex problems.

Course contents

Markov processes with discrete state spaces. Absorption, stationarity and ergodicity of Markov chains. Properties of birth and death processes in general and Poisson process in particular. Standard queueing models M/M/1 and M/M/c and queueing theory.

Examination

- TEN2 - Home Work, 0.8 credits, grading scale: P, F
- TEN1 - Examination, 2.2 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.

If the course is discontinued, students may request to be examined during the following two academic years.

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.