



# SF1926 Markov Processes with Applications 4.5 credits

Markovprocesser med tillämpningar

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

## Establishment

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Mathematics, Technology

## Specific prerequisites

- Completed basic course in linear algebra (SF1624, SF1672, SF1684, SF1694 or equivalent)
- Completed basic course in Probability Theory and Statistics (SF1915, SF1918 or equivalent).

## Intended learning outcomes

In order to pass the course the student shall be able to:

- solve problems which require the knowledge of basic notions and methods of the theory of Markov processes in discrete time.

- solve problems which require the knowledge of basic notions and methods of the theory of Markov processes in continuous time.
- Solve applied problems through project work.

In order to receive higher grades the student shall be able to:

- combine the notions and methods listed above for solving 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.

Applications of Markov processes.

## Examination

- TENA - Written exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project (assignment/work), 1.5 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. 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.