



# SF2940 Probability Theory 7.5 credits

## Sannolikhetsteori

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

The course syllabus is valid from Spring 2023 according to the school principal's decision: S-2023-0613 Decision date: 2023-04-13

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Mathematics

## Specific prerequisites

- English B / English 6
- Completed basic course in probability theory and statistic (SF1918, SF1922 or equivalent).

## Language of instruction

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

## Intended learning outcomes

The overall aim of the course is for students to become well-acquainted with basic probability theory concepts, models and solutions methods applied to concrete problem.

After passing the course, the students should be able to

- formulate and explain central definitions, results and theorems within probability theory
- systematically apply concepts and methods to independently solve basic problems within probability theory
- read and understand a mathematical text.

## Course contents

- Probability spaces, random variables and their distributions, functions of random variables, expectation
- Independence, conditional probabilities, conditional expectation
- Probability and moment generating functions, characteristic function, sums of random variables
- Convergence of random variables, law of large numbers, central limit theorem
- Multivariate normal distribution and applications

## Examination

- TEN1 - Examination, 7.5 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.