COURSE SYLLABUS

Mathematical Statistics, 7.5 credits

Matematisk statistik, 7,5 högskolepoäng

Course Code:	TMSK17	**Education Cycle:**	First-cycle level
Confirmed by:	Dean Feb 1, 2017	**Disciplinary domain:**	Natural sciences
Revised by:	Director of Education Oct 27, 2021	**Subject group:**	MS1
Valid From:	Jan 1, 2022	**Specialised in:**	G1F
Version:	4		

Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding
- display knowledge of the most common methods available to graphically and numerically describe a data set

Skills and abilities
- demonstrate the ability to perform basic probability calculations
- demonstrate the ability to compute estimates of relevant statistical parameters from a random sample
- demonstrate the ability to perform different types of hypothesis tests and compute the power of such a test in the case of a normal distribution assumption
- demonstrate the ability to use a calculator or software to perform a simple linear regression analysis

Judgement and approach
- demonstrate an understanding of the concept of random variability judge the benefits and risks of using different statistical models.

Contents

The course focuses on basic proability theory and relevant statistical inference methods that are used when analyzing a data set. Random variability is a fundamental concept.

The course includes the following elements:
- Basic probability theory
- Random Variables
- Discrete and continuous distributions, especially the normal distribution
- The Central limit theorem with applications
- Descriptive statistics
- Point estimates and interval estimates
- Hypothesis testing

- Simple linear regression analysis
- Correlation

Type of instruction

Lectures and seminars.

The teaching is conducted in English.

Prerequisites

General entry requirements and completed course Single Variable Calculus, 7,5 credits (or the equivalent).

Examination and grades

The course is graded 5,4,3 or Fail.

Registration of examination:

Name of the Test	Value	Grading
Examination	7.5 credits	5/4/3/U

Course literature

Literature

The literature list for the course will be provided 8 weeks before the course starts.

Title: Probability, Statistics and stochastic Processes
Author: Peter Olofsson, Mikael Andersson
Publisher: Wiley/Wrox
ISBN: 9780470889749