COURSE SYLLABUS
Mathematical Statistics, 7.5 credits

Matematisk statistik, 7,5 högskolepoäng

Course Code:	TMSB17	Education Cycle:	First-cycle level
Confirmed by:	Dean Jun 27, 2007	Disciplinary domain:	Natural sciences
Revised by:	Dec 1, 2011	Subject group:	MA1
Valid From:	Jan 1, 2012	Specialised in:	G1F
Version:	2		

Intended Learning Outcomes (ILO)

On completion of the course, the student should
- be able to perform basic probability calculations
- be very familiar with the notions of a random variable, its mean and variance and also be able to specify some typical distributions and their applications
- have a good understanding of the normal distribution and also be able to apply the central limit theorem
- have an understanding for the effect of variability in different circumstances
- be able to compute different kinds of numerical measures for a data set
- be able to use different methods of estimating a relevant parameter and also be able to compare the efficiency of different methods
- have an understanding for the uncertainty involved in connection with parameter estimation and should also be able to quantify and compute this uncertainty
- be able to use different kinds of hypothesis tests
- have an understanding for the risks involved in making a descision based on a hypothesis test
- have a knowledge of how to use statistical methods for quality control (SPC)

Contents

The course aims at giving basic knowledge of probability theory and statistical inference methods and their applications, especially in the analysis of sets of data.

The course includes the following topics:
- Basic probability theory
- Random variables
- Discrete and continuous distributions, especially the normal distribution
- The central limit theorem with applications
- Descriptive statistics
- Point estimates
- Interval estimates
- Test of hypothesis

- Nonparametric statistics
- Statistical quality control

Type of instruction

Lectures and seminars

The teaching is conducted in English.

Prerequisites

The course Calculus 7.5 ECTS (or the equivalent).

Examination and grades

The course is graded Fail (U), 3, 4 or 5.

Registration of examination:

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

Course literature

Literature

Title:Introduction to Probability and Statistics: Principles and Applications for Engineering and the
Computing Sciences, 4th edition
Publisher: McGraw-Hill Higher Education
ISBN: 9780071242486