



## COURSE SYLLABUS

# Mathematical Statistics, 6 credits

*Matematisk statistik, 6 högskolepoäng*

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|----------------------|-----------------------------------|-----------------------------|-------------------|
| <b>Course Code:</b>  | TMSG14                            | <b>Education Cycle:</b>     | First-cycle level |
| <b>Confirmed by:</b> | Dean Apr 10, 2013                 | <b>Disciplinary domain:</b> | Natural sciences  |
| <b>Revised by:</b>   | Director of Education Apr 5, 2016 | <b>Subject group:</b>       | MA1               |
| <b>Valid From:</b>   | Jan 1, 2017                       | <b>Specialised in:</b>      | G1N               |
| <b>Version:</b>      | 4                                 |                             |                   |
| <b>Reg number:</b>   | JTH 2016/1444-313                 |                             |                   |

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### Intended Learning Outcomes (ILO)

On completion of the course, the student should

Knowledge and understanding

- displaying knowledge of different methods used for statistically describing a data set
- being familiar with the terms correlation and correlation coefficient

Skills and abilities

- demonstrate comprehension of random variability in different situations
- demonstrating skills of doing basic probability calculations involving both continuous as well as discrete random variables
- demonstrating ability to compute different estimates of unknown parameters from a given data set
- demonstrating ability to perform and evaluate a relevant hypothesis test

### Contents

The course focus on the basic probability 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 topics:

- Basic probability theory
- Random variables
- Discrete and continuous distributions, especially the normal distribution
- Central limit theorem with applications
- Descriptive statistics
- Point estimates and interval estimates
- Hypothesis testing

### Type of instruction

Lectures and seminars.

The teaching is conducted in English.

**Prerequisites**

General entry requirements and Mathematics D or Mathematics 3c, alternatively completed course Basic Mathematics and Chemistry, 6 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      | 6 credits | 5/4/3/U |

**Course literature**

Literature

The literature is preliminary until one month before the course starts.

Title: Probability and Statistics for Engineers and Scientists

Author: Walpole, Myers, Ye

Publisher: Pearson

ISBN: 9781292161365