SYLLABUS

Probability Theory and Statistics 7.5 credits S0008M

Sannolikhetslära och statistik

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2022-02-14

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LULEÅ TEKNISKA UNIVERSITET

Probability Theory and Statistics 7.5 credits S0008M

Sannolikhetslära och statistik

First cycle, S0008M

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Matematisk statistik	Mathematical Statistics

Main field of study

Engineering Physics and Electrical Engineering

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and Differential calculus M0029M, Linear algebra and integral calculus M0030M and Linear algebra M0033M or equivalent.

Selection

The selection is based on 1-165 credits.

Course Aim

As a student you will, after completion of the course, be able to define descriptive statistics for distributions and data, such as measures of location and dispersion; be familiar with basic concepts from probability and statistical theory as well as understand the concept of a statistical model; be able to use statistical software for processing and analyzing data; be able to formulate and use some often used statistical models; be able to apply the statistical methods for analysis that the course treats; be able to assess when statistical methods are useful; be able to estimate how uncertainty affects conclusions and quantify risks in terms of error probabilities.

Contents

Descriptive statistics and exploratory data analysis: The most common methods are treated, including measures or location and dispersion, histogram- and boxplots. Probability theory: Basic concepts and models for random phenomena, the most common distributions, the central limit theorem, functions of random variables, conditional and higher-dimensional distributions, including the two-dimensional normal distribution. Statistical inference: point-, interval estimation and hypothesis testing in non-parametric situations and for the most common distributions, methods for comparing two populations, the use of statistical software. Simulation methods: Introduction to statistical methods of simulation and computation.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
Regular lectures, collaborative learning in small groups, laboratory assignments, and web-based quizzes (webbquizzes) that are done continuously throughout the course.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.
For grade 3: laboratory assignments and approved first part of the written examination. Grades 4 and 5 require that the more detailed, second part of the exam is written. Voluntary webquizzes can give bonus points to the first part of the written exam.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Remarks

This course cannot be included in a study program in combination with the course S0001M.

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Laboratory work	U G#	2.2	Mandatory	S10	
0005	Written exam	G U 3 4 5	5.3	Mandatory	A17	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Niklas Lehto, Programme Director 2022-02-14

Syllabus established

by Instiutionen för Matematik 2010-02-12