



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Sannolikhetsteori Probability Theory

FMSF05, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED I

Date of Decision: 2023-04-14

General Information

Elective for: BME4, F4, F4-fm, I4, Pi4

Language of instruction: The course will be given in English

Aim

The course gives a deeper and extended knowledge of probability theory, useful for further studies in, e.g., extreme value theory and stochastic processes and their applications.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to explain different concepts in stochastic convergence and how they relate to each other,
- be able to explain the concepts of characteristic and moment generating functions and how these functions can be used,
- be able to describe the multi dimensional normal distribution and the invariance properties under, e.g., linear combinations and conditioning,
- be able to explain the definition and basic properties of the Poisson process.

Competences and skills

For a passing grade the student must

- show the ability to integrate knowledge from the different parts of the course when solving problems.

Contents

The course deepens and expands the basic knowledge in probability theory. Central moments in the course are transforms of distribution, conditional expectations, multidimensional normal distribution, and stochastic convergence. Further, the concept of stochastic processes is introduced by a fairly thorough treatment of the properties of the Poisson process.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Written exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Admission requirements:

- FMSF20 Mathematical Statistics, Basic Course or FMSF25 Mathematical Statistics - Complementary Project or FMSF32 Mathematical Statistics or FMSF45 Mathematical Statistics, Basic Course or FMSF50 Mathematical Statistics, Basic Course or FMSF55 Mathematical Statistics, Basic Course or FMSF70 Mathematical Statistics or FMSF75 Mathematical Statistics, Basic Course or FMSF80 Mathematical Statistics, Basic Course

The number of participants is limited to: No

The course overlaps following course/s: MASC01

Reading list

- Gut, A.: An Intermediate Course in Probability Theory, Second Edition. Springer, 2010, ISBN: 978-1-4899-8446-3.

Contact and other information

Director of studies: Johan Lindström, studierektor@matstat.lu.se

Course administrator: Susann Nordqvist, expedition@matstat.lu.se

Course homepage:

<https://www.maths.lu.se/utbildning/civilingenjoersutbildning/matematisk-statistik-paa-civilingenjoersprogram/>

Further information: The course is also given at the Faculty of Science with the code MASC01.