



LUND
UNIVERSITY

Faculty of Science

MASC05, Mathematical Statistics: Design of Experiments, 7.5 credits

Matematisk statistik: Försöksplanering, 7,5 högskolepoäng
First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2007-07-01 and was last revised on 2007-07-01. The revised syllabus applies from 2007-07-01, autumn semester 2007.

General Information

The course is an elective course for first-cycle studies for a Bachelor of Science in Mathematics / Master of Science in Mathematical Statistics.

Language of instruction: Swedish and English

Main field of studies

Mathematics

Depth of study relative to the degree requirements

G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The aim of the course is that students on completion of the course should have acquired the following knowledge and skills:

Knowledge and understanding

On completion of the course, the students are expected to:

- be able to explain and use basic methods in factorial experiments,
- be able to explain and use basic methods in analysis of variance with fixed and random effects, regression and analysis of covariance.

Competence and skills

On completion of the course, the students are expected to:

- be able to plan a factorial experiment,
- be able to suggest an experimental plan suitable for a given problem,
- be able to structure and analyse sets of data using a computer package and critically examine the result,
- be able to, both in written reports and orally at seminars, account for the solutions of statistical problems

Course content

Simple design with fixed and random effects. Simultaneous confidence intervals. Requirements for analysis of variance: transformations, model validation, residual analysis. Factorial design with fixed, random, and mixed effects. Additivity and interaction. Complete and incomplete designs. Randomised block designs, Latin squares and confounding. Regression and analysis of covariance.

Course design

Teaching consists of lectures, exercises and computer exercises. Participation in computer exercises is compulsory.

Assessment

The examination consists of written reports and active participation in the seminars.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

For a passing grade on the entire course a passing grade on the passed computer exercise reports and participation in compulsory parts are required. The grade is formed by weighing together the results on the parts which are included the examination.

Entry requirements

For admission to the course knowledge equivalent to the courses MASA01, Mathematical Statistics: Basic Course, 15 credits and MASC01, Mathematical Statistics: Probability Theory, 7.5 credits is required.

Subcourses in MASC05, Mathematical Statistics: Design of Experiments

Applies from V16

- 0702 Exam, 5,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 0703 Laboratory Work, 0,5 hp
Grading scale: Fail, Pass
- 0704 Project, 2,0 hp
Grading scale: Fail, Pass

Applies from V09

- 0901 Design of Experiments, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction