Details of approval

The syllabus is a draft but not yet established.

General Information

The course is a mandatory course for first-cycle studies for a Bachelor of Science in mathematics.

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 relate questions about random variation and observed data to the concepts random variables, distributions and relations between variables;
• be able to explain the concepts of independence, probability, conditional probability, distribution, expectation, variance, and covariance;
• be able to calculate the probability of an event, and the expectation and variance from a given distribution;
• be able to describe fundamental techniques for statistical inference and be able to use them on basic statistical models, as well as modify them to fit more complicated models.
Competence and skills
On completion of the course, the students are expected to:

- be able to construct a simple statistical model describing a problem based on a real life situation or on a collected data material,
- be able to use a computational program for simulation and interpretation of statistical models, as well as for data analysis,
- be able to choose, modify, perform, and interpret a statistical procedure that answers a given statistical problem,
- be able to use statistical terms within the field in writing.

Judgement and approach
On completion of the course, the students are expected to:

- be able to examine a statistical model and its ability to describe reality.

Course content


Course design

The course is divided into two halves, there the first covers probability theory and the second covers statistics. Teaching consists of lectures, exercises and computer exercises. Participation in computer exercises is compulsory.

Assessment

The examination is done in form of two written exams, one after each half of the course, and an oral exam at the end of the course. Students who did not pass the ordinary exam are offered a re-examination shortly after.

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. In order to pass the entire course, the student must pass all compulsory parts of the course. The final grade is based on the acquired results for the different parts of the examination.

Entry requirements

For admission to the course, general entry requirements and knowledge equivalent to the courses:

MATA21 Analysis in One Variable 15
MATA22 Linear Algebra 1 7.5
MATA23 Foundations of Algebra 7.5
NUMA01 Computational Programming with Python 7.5
MATB21 Analysis in Several Variables 1 7.5
MATB22 Linear algebra 2 7.5

Alternatively general entry requirements and knowledge equivalent to the courses:

MATA15 Algebra 1 15, MATA14 Analysis 1 15, MATB15 Analysis in Several Variables 15
MATB11 Linear Algebra 7.5 and NUMA21, Tools in Computational Mathematics 7.5

Further information

The course may not be included in a higher education qualification together with any of the courses MAS110 Mathematical Statistics, basic course, 15 credits, or together with any course with coursecode starting with MASB.
Subcourses in MASA01, Mathematical Statistics: Basic Course

Applies from H07

0701 A. Probability Theory, 5,0 hp
     Grading scale: Fail, Pass, Pass with distinction
0702 Computer Exercise A, 0,0 hp
     Grading scale: Fail, Pass
0703 B. Statistical Theory, 5,0 hp
     Grading scale: Fail, Pass, Pass with distinction
0704 Computer Exercise B, 0,0 hp
     Grading scale: Fail, Pass
0705 Oral Exam, 5,0 hp
     Grading scale: Fail, Pass, Pass with distinction

This is a translation of the course syllabus approved in Swedish