MASC02, Mathematical Statistics: Statistical Inference Theory, 7.5 credits  
Matematisk statistik: Statistisk inferensteori, 7,5 högskolepoäng  
First Cycle / Grundnivå

Details of approval  
The syllabus was approved by Study programmes board, Faculty of Science on 2007-06-14 to be valid 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  
Language of instruction: Swedish and English  
Main field of studies  
Depth of study relative to the degree requirements  
Mathematics  
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:  
- to be able to explain the meaning usage of concepts in statistical inference theory,  
- to be able to explain Bayesian inference, and the what difference is compared to the frequentistic interpretation.

**Skills and abilities**  
On completion of the course, the students are expected to:  
- to be able to integrate knowledge from the different parts of the when solving statistical problems.
Course design
Asymptotic methods: maximum likelihood estimation, profile, conditional and penalised likelihood as well as hypothesis testing with likelihood ratio-, Wald- and score-method.
Bayesian inference: estimation, hypothesis testing and confidence interval and the difference compared to frequentistic interpretation.

Course implementation
Teaching consists of lectures and exercises, which to a high degree involves active participation of the students. The students should therefore prepare to be able to participate in the discussions and problem solving.

Assessment
The examination consists of a written exam followed by an oral exam. Students who fail the regular exam are offered a re-examination shortly afterwards.

Subcourses
0701 Exam, 7.5 hp Grading scale: Fail, Pass, Pass with distinction

Grades
For a passing grade on the entire course a passing grade on the written and oral exam
The grade is formed by weighing together the results on the parts which are included the examination.
Marking scale: Fail, Pass, Pass with distinction.

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.