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 second-cycle studies for a Master of Science in Mathematical statistics.

Language of instruction: English and Swedish

Main field of studies Depth of study relative to the degree requirements

Mathematical Statistics A1N, Second cycle, has only first-cycle course/s as entry requirements

Mathematics A1N, Second cycle, has only 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 the measure theoretic approach to probabilities and random variables;
- be able to explain the construction of the Lebesgue-integral and the fundamental convergence theorem for this integral;
• be able to explain how the concepts conditional expectation and weak convergence can be formalised through measure theory.

**Skills and abilities**
On completion of the course, the students are expected to:
• be able to use the fundamental theorems in integration theory to solve problems;
• be able to choose an appropriate solution strategy for a problem within the course's range, and thereafter work out a detailed solution.

**Course design**
The course deepens and extends basic knowledge in probability theory. Central part of the course is existence- and uniqueness theorems about measures defined on sigma-algebras, integration theory, condition expectation and weak convergence in metric spaces.

**Course implementation**
Teaching consists of lectures and exercises, which to a large extent is dependent on that the student actively participate. The students should therefore be prepared to be able to participate in 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 are required. 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 English B and knowledge equivalent to 60 credits in mathematics is required. The course MASC01 Probability Theory, 7.5 credits, is recommended.