Faculty Board of Science

MSF300 Probabilities and Expectations

7.5 higher education credits

Second Cycle

This syllabus is a binding document.

1. Confirmation

The syllabus was confirmed by the Department of Mathematical Sciences on June 1, 2009 to be valid from July 1, 2009.
Field of education: Science. Responsible department: Mathematical Sciences.

2. Position in the educational system

The course MSF300, 7.5 higher education credits, is one of several single subject courses included in the two-year Masters Program in Mathematical Sciences. The course is also open for eligible students outside the program. It is further one of the courses in the post-graduate program in Mathematical statistics.

3. Entrance qualifications

The prerequisite for the course MSF300 is the equivalent of the course MSA150 Foundations of Probability Theory.

4. Course content

The course is intended for students of the second year of master studies. Its purpose is to provide thorough knowledge of the fundamentals of probability theory, and prepare the student for graduate studies. Main topics of the course:

- measure spaces and probabilities,

- the Lebesgue measure,

- Lebesgue integrals and expectations,

- product measures and independence,

- pi-systems, Dynkin's Lemma, and Kolmogorov's 0-1 law,

- characteristic functions and the central limit theorem.

5. Learning outcomes

After completing the course, the student will be able to explain and apply the concepts and theorems mentioned in the course content above.

6. Required reading

David Williams, Probability with Martingales, Cambridge University Press, Chapters 1-8 and 16-18, and relevant parts of the appendices.

7. Assessment

An examination will be given at the end of the course. A student who has failed a test twice has the right to change examiner, unless weighty arguments can be invoked. For this, the student must send a written request to the board of the department.

Each student shall give at least one oral presentation of an assigned topic.

8. Grading scale

The grades are Fail (U), Pass (G), and Pass with Distinction (VG).

Students who are contractually entitled to ECTS grades should inform the examiner about this no later than one week after the start of the course.

Students without such entitlement will not be awarded ECTS grades. Grades will be converted into ECTS terminology according to a standard model approved by the University President.

9. Course evaluation

Oral and/or written course evaluation will be performed. The results of the evaluation will be communicated to the students and will serve as a guide for the development of the course.

10. Additional information

The language of instruction is English unless all involved are Swedish speakers.