Linnæus University

Course syllabus

Faculty Board of Science and Engineering
School of Computer Science, Physics and Mathematics

4MA203 Stokastisk analys, 7,5 högskolepoäng
Stochastic Analysis, 7.5 credits

Main field of study
Mathematics

Subject Group
Mathematics

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by the Board of the School of Computer Science, Physics and Mathematics 2009-12-01

Revised 2010-11-26. Revision made for prerequisites and course evaluation.

The course syllabus is valid from autumn semester 2011

Prerequisites
15 credits in mathematics at G2F-level and Probability Theory and Statistics 7.5 credits (1MA201).

Expected learning outcomes
The student shall account for and perform proofs as well as computations for:

- the Brownian motion
- Ito-integrals
- stochastic differential equations
- change of probability measure by Cameron-Girsanov transformation
- the coupling between stochastic differential equations and parabolic equations by Feynman-Kac' formula
- option pricing and hedging under Black-Scholes assumptions.

Content
The course contents is:

- the Brownian motion
- Ito-integrals
- stochastic differential equations
- change of probability measure by Cameron-Girsanov transformation

- the coupling between stochastic differential equations and parabolic equations by Feynman-Kac' formula
- option pricing and hedging under Black-Scholes assumptions.

Type of Instruction
Lectures and seminars. Compulsory assignments may be given during the course.

Examination
The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
The student's knowledge is assessed in the form of oral and/or written examinations. Continuos examination throughout the course in the form of oral and/or written presentations can occur.
The principal assessment method for the course is determined at the beginning of the course.

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

Course Evaluation
A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

Required Reading and Additional Study Material
Required reading
Shreve S E *Stochastic calculus for finance II, Continuous-time models*, Springer Verlag 2004.
60 (550) pages.

Oksendal B *Stochastic differential equations*, Springer Verlag 2000.
160 (320) pages.