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

Subject Group
Mathematics

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by Organisational Committee 2009-12-01

The course syllabus is valid from autumn semester 2010

Prerequisites
4MA203 or 1MA201 or equivalent and 15 hec in mathematics at G3-nivå.

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

After the course a written evaluation of the course will take place according to the University guidelines.

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.