

MATH 550  
**STOCHASTIC CALCULUS II**  
SPRING 2013/14

INSTRUCTOR: Alexey Lukashov

PLACE: Fatih university, B-316

TIMETABLE: Monday, 12.00-15.00

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ASSESSMENT:

PRE-REQUISITES: Real analysis; Probability Theory; Complex analysis

PRINCIPAL TEXTBOOK: Stochastic Calculus and Financial Applications by J. Michael Steele

PROGRAMME

<b>WEEKS</b>	<b>SUBJECTS TO BE COVERED</b>
1 & 2	Review of Ito formulas
3 & 4	Stochastic differential equations: examples & SDE: existence and uniqueness theorems
5 & 6	Black-Scholes model and formula
7 & 8	Representation theorems
<b>Will be announced</b>	<b>Mid-term Exam</b>
9 & 10	Simplest Girsanov theorem & Levy-Bachelier formula
11 & 12	Elements of Girsanov theory & Arbitrage and martingales
13 & 14	Black-Scholes formula via martingales & Elements of stochastic portfolio theory
<b>Will be announced</b>	<b>Final Examination</b>

SUGGESTED READING:

- Karatzas I., Shreve S. Brownian motion and stochastic calculus (2d ed.) Springer, 1991
- Protter P.E. Stochastic integration and differential equations (2d ed.) Springer, 2004
- Oksendal B. Stochastic differential equations (5th ed.) Springer, 1998