

Financial Mathematics 2

Course Syllabus

Fall Term 2013 — SNU

Course Title	Financial Mathematics 2 (in English)
Course number	3341.452
Instructor	Gerald Trutnau
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Course homepage	http://www.math.snu.ac.kr/~trutnau/teachingFinance22013.html
Course Objective	The purpose of this course is to understand basic concepts of probability theory, measure theory, functional and stochastic analysis, in order to finally present and to understand the Black and Scholes formula in the second semester.
References	<p>Here are some references on probability, stochastic analysis, and measure theory:</p> <ul style="list-style-type: none">- Bauer, H.: Measure and integration theory, Walter de Gruyter & Co., ISBN: 3-11-016719-0- Billingsley, P.: Probability and measure, third edition. Wiley, 1995. ISBN: 0-471-00710-2- Chung, K. L.: A Course in Probability Theory, Third Edition Academic Press;- Chung, K. L.; Williams, R. J. Introduction to stochastic integration, second edition. Birkhäuser, ISBN: 0-8176-3386-3- Durrett, R.: Probability: theory and examples, fourth edition. Cambridge University Press, ISBN: 978-0-521-76539-8- Jacod, J.; Protter, P.: Probability essentials, second edition. Universitext. Springer, ISBN: 3-540-43871-8- Klenke, A.: Probability theory. A comprehensive course. Universitext. Springer, ISBN: 978-1-84800-047-6

References Here are some references on financial mathematics:

- Baxter, Martin, Andrew Rennie: *Financial Calculus: An Introduction to Derivative Pricing*, Cambridge University Press, 1996.
- Chung, K. L., AitSahlia, F.: *Elementary Probability Theory: With Stochastic Processes and an Introduction to Mathematical Finance*, Springer;
- Lamberton, Damien; Lapeyre, Bernard: *Introduction to stochastic calculus applied to finance*. Second edition. Chapman & Hall/CRC Financial Mathematics Series, Boca Raton, FL, 2008.
- Mikosch, Thomas: *Elementary stochastic calculus with finance in view*, World scientific (1998)
- Shreve, Steven E.: *Stochastic Calculus for finance I, II*, Springer, 2004.

Description In the second semester we will continue to introduce basic concepts of probability theory, measure theory and stochastic analysis like: conditional expectation, martingales, stochastic integration, stochastic differential equations, etc (to be updated).

Evaluation - Attendance (10 % of final score).

- Assignment sheets (40 % of final score);

Students must solve exercises regularly, and will be given assignment sheets mostly every week.

- Midterm (8th week, 75 minutes, 25 % of final score);

- Final exam (15th week, 75 minutes, 25 % of final score);