Prof. Dr. Dirk Becherer
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Institute of Mathematics, Section Stochastics

April 2020

In summer term 2020 I am teaching the course

*Stochastic Finance II**
(Stochastische Finanzmathematik II)

** We will ~~be happy to~~ teach in English to facilitate participation by international students.*
The course is to be taught online - please register via AGNES to receive further details

Content /Inhalt:

Continuous time theory of stochastic finance, diffusion models and martingale methods, applications to pricing and hedging of risks from derivatives, optimal stochastic control and portfolio optimization.
(Zeitstetige Modelle der Finanzmathematik, Diffusionsmodelle und Martingalmethoden, Anwendung auf die Bewertung und Absicherung von Risiken derivater Finanzinstrumente, optimale stochastische Kontrolle und Portfoliooptimierung.)

Prerequisites/Voraussetzungen:

Courses Analysis 1+2, measure theory on general spaces to the extend taught within HU module Analysis 3, Linear Algebra 1+2, Stochastics 2 (aka Stochastic Processes I). It would be beneficial but it not required to attend Stochastic Analysis in parallel. It is not required for this course to have attended the module Stochastic Finance 1.
(Grundvorlesungen (Analysis 1+2, Teilmodul Maßtheorie im Umfang der Analysis 3, Lineare Algebra 1+2), Stochastik 2. Es wäre hilfreich aber ist nicht nötig, die Stochastische Analysis parallel zu hören. Finanzmathematik I wird nicht vorausgesetzt.)

Literature (online available within HU net, use VPN from remote):*

Björk, T.: Arbitrage Theory in Continuous Time, Oxford Univ. Press, 2004 (*)
Brigo, D.; Mercurio, F.: Interest Rate Models Theory and Practice, Springer, 2007 (*)
Eberlein, R.; Kallsen, J.: Mathematical Finance, Springer, 2019
Filipovic, D.: Term Structure Models, Springer, 2009
Lamperton, D.; Lapeyre, B.: Stochastic Calculus Applied to Finance, Chapman Hall, 2008
Pham, H.: Continuous-time Stochastic Control and Optimization with Financial Applications, Springer, 2009
Shreve, S.: Stochastic Calculus for Finance II, Springer, 2000

Hull, J. C.: Options, Futures, and Other Derivatives, Pearson Prentice Hall, 2006 (application perspective)
Davis, Mark H.A.: Mathematical Finance: A very short introduction, Oxford U.P. (overview, with basic maths only)
Klenke, A.: Probability Theory, Springer, 2008;
deutsche Ausgabe: Wahrscheinlichkeitstheorie, Springer, 2013 (*, probability background, incl. measure theory)

Time and place: This course will be taught online in this term, using Moodle, Zoom/Jistsi, OpenVPN etc. Register through AGNES. Please make sure to use your university email address.

Do, 09 – 11 Uhr, ~~Rudower Chaussee 25, Raum 1.115~~ (Online via Agnes/Moodle)
Fr, ~~09 – 11 Uhr, Rudower Chaussee 26, Raum 1‘304~~

Begin: ~~**am 16. 04. 2020**~~ **am 23.4.20**

Classes and exercises (Mr. Likai Jiao or Ms. Martha Nansubuga):

Fr, 11 - 13 Uhr, ~~Rudower Chaussee 26, Raum 1‘304~~ (Online via Agnes/Moodle)

Begin: ~~**am 17. 04. 2020**~~ **am 24.4.20**

Office hours: **by appointment.**