Prof. Dr. N. Perkowski
Dr. A. Bachouch
Institute of Mathematics
Stochastics

In the summer term 2016 we shall read the following lecture:

Stochastic Analysis

(BMS Basic Course)

This is a BMS course that will be taught in English to facilitate participation of international students.

Content:

Gaussian processes; white noise; Brownian motion and its path properties; filtrations and stopping times; continuous time martingales; continuous semimartingales; quadratic variation; stochastic integration; Itô's formula; Burkholder's inequality; change of measure; martingale representation; stochastic differential equations: existence and uniqueness, Markov property, link with partial differential equations.

Prerequisites:

Analysis I and II, Stochastics I and II. Recommended: Analysis III and basic knowledge of Functional Analysis.

References:

- J.-F. Le Gall's lecture notes (French): http://www.math.u-psud.fr/~maury/paps/BOOK_Legall.pdf
- J. Jacod's lecture notes (French): http://www.proba.jussieu.fr/cours/DEA-07.pdf
- I. Karatzas and S. Shreve. *Brownian motion and stochastic calculus.* 2nd ed. Springer (1991)
- D. Revuz and M. Yor. *Continuous martingales and Brownian motion.* 3rd ed. Springer (1999)
- P. Mörters and Y. Peres. *Brownian Motion.* 1st ed. Cambridge University Press (2010)
- G. Lowther's blog: https://almostsure.wordpress.com

Lectures (N. Perkowski and A. Bachouch):

Monday, 13 – 15, RUD 25, room 1.013
Wednesday, 13 – 15, RUD 26, room 0'311

First lecture: April 18, 2016

Exercises (A. Bachouch):

Monday, 15 – 17, RUD 25, room 3.008

Office hours: by agreement.

Course webpage:
http://www2.mathematik.hu-berlin.de/~bachouca/teaching%202015-2016/SS16StochasticAnalysis.html