Prof. Dr. D. Becherer
http://www.math.hu-berlin.de/~becherer
Institute of Mathematics
Stochastics

In winter term 22/23 I shall read the following lecture

Stochastics II

(BMS Course Stochastic Processes)

This course will be taught in English to facilitate participation of international students from BMS.

Content:

Conditional expectations, martingales in discrete time: stopping and convergence theorems with applications, construction of stochastic processes, Markov and Gaussian processes, weak convergence of measures, invariance principle and Brownian motion

Prerequisites:

Modules 4 and 5 „Lineare Algebra und Analytische Geometrie I und II" (linear algebra I + II), modules 1 and 2 „Analysis I und II", measure and integration theory to the extend provided in the module "Analysis III" and module 9 „Stochastik I".
Students who need to refresh (or catch up by self-study) on measure and integration theory, find excellent expositions in Klenke (ch. 1,4,6, 14.1-2), Williams (part A) or Rogers/Williams (ch. II.1-2).

References:

Klenke, A.: *Wahrscheinlichkeitstheorie*, Springer 2008
(available online via HU-net at libary: http://dx.doi.org/10.1007/978-3-642-36018-3)
Klenke, A.: Probability Theory: A Comprehensive Course, Springer 2008
Jacod, J. / Protter, Ph.: *Probability Essentials*, Springer 2000
(http://dx.doi.org/10.1007/978-3-642-55682-1)
Rogers, L.C.G. / Williams, D.: *Diffusions, Markov Processes and Martingales*; Vol 1
Širjaev, Albert N.: *Wahrscheinlichkeit*, (z.B. Dt. Verlag der Wissenschaft, 1988)
Shiryaev, Albert N.: *Probability*, Springer-Verlag 1995
(http://dx.doi.org/10.1007/978-1-4757-2539-1)
Williams, D.: *Probability with Martingales*, Cambridge University Press 1991
Bauer, Heinz; *Wahrscheinlichkeitstheorie*, de Gruyter 2002

Lectures (Prof. Dirk Becherer):

Tuesday, 11 – 13, RUD 26, room 0'310
Wednesday, 09 – 11, RUD 26, room 0'310

First lectures: **October 18, 2022**

Exercises (Yuchen Sun):

Tuesday, 13 – 15, RUD 26, room 1'304

Office hours: tba