



Seminar: Stochastic Differential Equations and Applications

- Lecturer: Robert Stelzer and Jana Reker
- Type: Master (Mathematics, WiMa, Finance, MaBi, CSE)
- Registration: To register for the seminar, please write an e-mail to jana.reker@uni-ulm.de until 16th February 2019. Please give your name, your matriculation number, your course of study and the subjects you have taken in the area of Financial Mathematics, Stochastic Processes or Probability Theory. The number of participants is limited to 15 students.
- Organization: Weekly during the summer term
- First meeting: The assignment of topics will take place on Thursday, 21st of February from 13 to 14 pm in room He18, 1.20. The first talk will then take place in the first week of the summer term 2019.
- Prerequisites: Required:
- Solid knowledge in Measure Theory and Probability Theory (e.g. Stochastics 1 or Introduction to Measure Theoretic Probability)
 - General knowledge in Stochastic Processes (e.g. Stochastics 2 or Financial Mathematics 1)
- Helpful:
- Some general knowledge in Stochastic Integration Theory (e.g. Financial Mathematics 2)
- Contents: This seminar aims to introduce its participants to the theory of stochastic differential equations ('SDEs' for short). After revisiting the theoretical background including the Itô integral and some chosen chapters of stochastic calculus, we will study some results on existence and uniqueness of solutions of SDEs. Depending on the number of participants, we will then explore various applications which may include topics such as filtering, stochastic solutions of boundary value problems, optimal stopping, stochastic control or applications in Mathematical Finance.
- Literature: Øksendal, B. *Stochastic Differential Equations : An Introduction with Applications*, 6th ed., 6th corr. printing, Springer, Berlin, 2013.