

# 2017 SoS Stochastic Simulation

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*Institut für Stochastik, Leibniz Universität Hannover*

## General Information

- Lecture | Dr. Sojung Kim  
Tue/Fri 10.15 - 11.45, F428 (Begin: 11 April 2017)
- Exercise | Sören Bettels  
Mon 08.15 - 09.45, F428 (Begin: 24 April 2017)
- Main textbook | P. Glasserman, Monte Carlo Methods in Financial Engineering. Springer 2004.

## Course Topics

This course offers an in-depth treatment of stochastic simulation and Monte Carlo methods. The course emphasizes the analysis of statistical and computational efficiency, and practical considerations arising from models used in industry.

Course work will include regular homework assignments, one paper presentation, and a final exam. Every homework assignment will involve at least one computer implementation of methods discussed in class. Use of MATLAB for computer work is encouraged but not required. For computer implementation, you will be required to submit your analysis of the results as well as a pseudo-code.

The following topics are to be covered:

- General sampling method and principles of Monte Carlo method
- Simulation of stochastic processes
- Statistical and computational efficiency analysis
- Variance reduction techniques
- Advanced topics by recent papers

## Literature

- S. Asmussen, P. W. Glynn, Stochastic Simulation, Algorithms and Analysis. Springer, 2007
- G. Casella, R. L. Berger, Statistical Inference, Duxbury, 2002 | chapter 5

*Dr. Sojung Kim*

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