Forschungsgruppe Finanz- und Versicherungsmathematik
TUM School of Computation, Information and Technology
Technische Universität München

Announcement SoSe 2025

Lecture in Mathematical Finance

Quantitative Risk Management

Prof. Dr. Aleksey Min

Area: / Modulnr.: Insurance Mathematics / MA5415

Course Structure: Lecture: 2h Exercises: 1h

Content: I) Some statistical tools: Quantile functions, Empirical distribution and quantile function
II) Risk measures: Axiomatic approach, Examples
III) Standard methods for market risk: Variance-covariance method, Historical simulation, Monte Carlo method
IV) Statistical methods in extreme value theory: Extreme value distributions, Domains of attraction, Statistical estimation of extremes
V) Copulas

Audience: MSc Mathematics, Mathematical Finance and Actuarial Science

Prerequisite: MA0003 Analysis 3, MA0009 Introduction to Probability and Statistics, MA2409 Probability Theory

Literature:
McNeil, A.J., Frey, R. and Embrechts, P. (2005): Quantitative Risk Management: Concepts, Techniques and Tools, Princeton University Press.
Carmona, R. (2004): Statistical Analysis of Financial Data in S-Plus, Springer, New York.
Glasserman, P. (2004): Monte Carlo Methods in Financial Engineering, Springer, New York.
Mai, J.-F. and Scherer, M. (2012): Simulating Copulas: Stochastic Models, Sampling Algorithms and Applications, Imperial College Press.
Föllmer, H and Schied, A. (2016): Stochastic Finance, De Gruyter.
Czado, C. and Schmidt, T. (2011): Mathematische Statistik, Springer.

Certificate: Exam, 5 ECTS

Location and Time: see TUMonline