

# Announcement SoSe 2023

## 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