

Overview Courses¹

Master Mathematics

Winter Term 2026/27

Compulsory Modules:

Counseling Module (Prof. Dr. Harks et al.)

Seminars 1 & 2:

- **Advanced Seminar Dynamical Systems** (Prof. Dr. Wirth)
- **Advanced Topics in Combinatorics** (Prof. Dr. Glock)
- **Discrete Stochastic Processes** (PD Dr. Gilch)
- **Functional Analysis** (Prof. Dr. Prochno, Dr. Krieg)
- **Fourier and Wavelet Analysis through Linear Algebra** (Prof. Dr. Forster-Heinlein)
- **Logic and Geometry** (Prof. Dr. Kaiser, Prof. Dr. Müller)
- **Monte Carlo Methods and Applications** (Prof. Dr. Rudolf)
- **NOCAS** (Prof. Dr. Kreuzer)
- **Optimization and Game Theory with Applications in Traffic Networks** (Prof. Dr. Harks)
- **Selected Chapters from Stochastics** (Prof. Dr. Müller-Gronbach)

Module Group: “Algebra and Discrete Structures”:

Algebraic Combinatorics (Dr. Petr)

Algorithmic Graph Theory and Perfect Graphs (Prof. Dr. Rutter)

Algorithms under Uncertainty (Dr. Opris)

Computer Algebra (Prof. Dr. Kreuzer)

Parameterized Algorithms (Prof. Dr. Rutter)

Randomised Algorithms (Prof. Dr. Sudholt)

Seminar:

- **Advanced Topics in Combinatorics** (Prof. Dr. Glock)
- **NOCAS** (Prof. Dr. Kreuzer)

¹No guarantee on completeness and correctness.

Module Group: “Logic and Geometry”:

Mathematical Logic (Prof. Dr. Müller)

Seminar:

- **Logic and Geometry** (Prof. Dr. Kaiser, Prof. Dr. Müller)

Module Group: “Applied Analysis and Optimization”:

Advanced Imaging (Prof. Dr. Sauer)

Asymptotic Geometric Analysis and Applications (Prof. Dr. Prochno)

Computational Game Theory (Prof. Dr. Harks)

Distributed Algorithms (Dr. Ghodselahi)

Fourier and Laplace Transforms (Prof. Dr. Forster-Heinlein)

Introduction to Information-based Complexity and Compressed Sensing
(Dr. Krieg)

Partial Differential Equations (Prof. Dr. Wirth)

Seminar:

- **Advanced Seminar Dynamical Systems** (Prof. Dr. Wirth)
- **Fourier and Wavelet Analysis through Linear Algebra** (Prof. Dr. Forster-Heinlein)
- **Optimization and Game Theory with Applications in Traffic Networks** (Prof. Dr. Harks)

Module Group: “Functional Analysis and Stochastics”:

Functional Analysis (Prof. Dr. Prochno)

Mathematical Statistics (Prof. Dr. Müller-Gronbach)

Slice Sampling (Prof. Dr. Rudolf)

Seminar:

- **Discrete Stochastic Processes** (PD Dr. Gilch)
- **Functional Analysis** (Prof. Dr. Prochno, Dr. Krieg)
- **Monte Carlo Methods and Applications** (Prof. Dr. Rudolf)
- **Selected Chapters from Stochastics** (Prof. Dr. Müller-Gronbach)

Modulgruppe: “AI and Data Science”:

Algorithms under Uncertainty (Dr. Opris)

Computational Libguistics Shared Task Lab (Prof. Dr. Hautli-Janisz)

Introduction to Deep Learning (Prof. Dr. Lemmerich)

Randomised Algorithms (Prof. Dr. Sudholt)

Scaling Database Systems (Prof. Dr. Scherzinger)

Modulgruppe: “Applications”:

Econometric Methods (Prof. Dr. Haupt)

Financial Engineering and Structured Finance (Prof. Dr. Entrop)

Foundations of Econometrics (Prof. Dr. Haupt)

Marketing Research – Retake Exam (Prof. Dr. Schindler)

Quantitative Methods in Finance (Prof. Dr. Entrop)