

Overview Courses¹
Master Computational Mathematics
Winter Term 2025/26

Module Group: “Algebra, Geometry and Cryptography”:

Rings and Modules (Prof. Dr. Zumbärgel)

Topology II (Dr. Epperlein)

Seminar:

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

Module Group: “Mathematical Logic and Discrete Mathematics”:

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

Algorithms under Uncertainty (Dr. Opris)

Model Theory (Prof. Dr. Müller)

Parameterized Algorithms (Prof. Dr. Rutter)

Random Graphs (Prof. Dr. Glock)

Randomised Algorithms (Prof. Dr. Sudholt)

Seminar:

- **Logic and Geometry** (Prof. Dr. Kaiser, Prof. Dr. Müller)
- **The Millennium Problems** (Prof. Dr. Glock)

¹No guarantee on completeness and correctness.

Module Group: “Analysis, Numerics and Approximation Theory”:

Distribution Theory (Prof. Dr. Forster-Heinlein)

Mathematical Foundations of Machine Learning (Prof. Dr. Sauer)

Wavelets (Prof. Dr. Sauer)

Seminar:

- **Functional Analysis** (Dr. Krieg)
- **Spectral Methods and Numerical Algorithms** (Prof. Dr. Forster-Heinlein)

Module Group: “Dynamical Systems and Optimization”:

Computational Game Theory (Prof. Dr. Harks)

Optimization (Prof. Dr. Harks)

Seminar:

- **Advanced Seminar Dynamical Systems** (Prof. Dr. Wirth)
- **Optimization and Game Theory** (Prof. Dr. Harks)

Module Group: “Stochastics, Statistics”:

Slice Sampling (Prof. Dr. Rudolf)

Stochastic Analysis (Prof. Dr. Müller-Gronbach)

Seminar:

- **Monte Carlo Methods and Applications** (Prof. Dr. Rudolf)

Modulgruppe: “Data Analysis and Data Management and Programming”:

Algorithms under Uncertainty (Dr. Opris)

Advanced Topics in Data Science (Prof. Dr. Granitzer)

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

Data Science Lab (Prof. Dr. Granitzer)

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)

Marketing Research – Wiederholerklausur (Prof. Dr. Totzek)

Quantitative Methods in Finance (Prof. Dr. Entrop)