Overview Courses[1]
Master Computational Mathematics
Summer Term 2025

Module Group: "Algebra, Geometry and Cryptography":

Computer Algebra (Prof. Dr. Kreuzer)

Cryptography (Prof. Dr. Kreuzer)

Seminar:

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

Module Group : "Mathematical Logic and Discrete Mathematics":

Combinatorial Number Theory (Prof. Dr. Glock)

Efficient Algorithms (Dr. Dang)

Extremal Combinatorics (Dr. Sgueglia)

Mathematical Logic (Prof. Dr. Müller)

Theory of Evolutionary Computation (Prof. Dr. Sudholt)

Seminar:

- **Logic and Geometry** (Prof. Dr. Kaiser, Prof. Dr. Müller)
- **Spectral Graph Theory** (Prof. Dr. Glock)

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[1]No guarentee on completeness and correctness.

Module Group: "Analysis, Numerics and Approximation Theory":

Advanced Imaging (Prof. Dr. Sauer)

Continued Fractions (Prof. Dr. Sauer)

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

Funktionalanalysis (Prof. Dr. Prochno)

Seminar:

- **Analysis** (Prof. Dr. Prochno)
- **Funktionalanalysis** (Prof. Dr. Prochno)

Module Group: "Dynamical Systems and Optimization":

Online and Approximation Algorithms (Prof. Dr. Harks)

Seminar:

- **Advanced Seminar Dynamical Systems** (Prof. Dr. Wirth)
- **Lineare Algebra und Optimierung** (Prof. Dr. Harks)
- **Online/Approximation and Distributed Algorithms** (Prof. Dr. Harks)
- **Optimization and Game Theory** (Prof. Dr. Harks)

Module Group: "Stochastics, Statistics":

Seminar:

  Diskrete Stochastische Prozesse (PD Dr. Gilch)
- **Mathematical Data Science** (Prof. Dr. Rudolf)
- **Monte Carlo Methods and Applications** (Prof. Dr. Rudolf)

Module Group: "Data Analysis and Data Management and Programming":

Computational Linguistics (Prof. Dr. Hautli-Janisz)

Deep Learning for Natural Language and Codes (Prof. Dr. Herbold)

Efficient Algorithms (Dr. Dang)

Functional Programming (Prof. Dr. Griebl)

Introduction to Topological Data Analysis (Prof. Dr. Rutter)

Machine Learning Lab (Prof. Dr. Granitzer)

Multimedia Databases (Prof. Dr. Kosch)

Practical Parallel Programming (Dr. Größlinger)

Principles of Data Organisation (Dr. Skoda)

Responsible Machine Learning (Prof. Dr. Lemmerich)

Semantic Data Integration (Prof. Dr. Algergawy)

Theory of Evolutionary Computation (Prof. Dr. Sudholt)

Module Goup: "Applications":

Approximate Dynamic Programming (Reinforcement Learning) - vormals Advanced Topics in Management Sciences (Prof. Dr. Otto)

Computational Statistics - Statistical Learning in R (Dr. Schnurbus)

Corporate Finance and Capital Markets (Prof. Dr. Entrop)

Marketing Research (Prof. Dr. Totzek)

Paneldatenanalyse (Dr. Fritsch)

Quantitative Methods in Finance (Prof. Dr. Entrop)

Topics in Applied Econometrics (Prof. Dr. Haupt)