Overview Courses[1]
Master Computational Mathematics
Winter Term 2024/25

Module Group: "Algebra, Geometry and Cryptography":

Distributed Algorithms (Prof. Dr. Harks)

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)

Complexity Theory (Prof. Dr. Müller)

Constraint Satisfaction Problems (Prof. Dr. Müller)

Model Theory (Prof. Dr. Kaiser)

Parameterized Algorithms (Prof. Dr. Rutter)

Random Graphs (Prof. Dr. Glock)

Randomised Algorithms (Prof. Dr. Sudholt)

Seminar:

- **Algorithms for Big Data** (Prof. Dr. Rutter)
- **Logic and Geometry** (Prof. Dr. Kaiser, Prof. Dr. Müller)
- **The Resolution Calculus** (Prof. Dr. Müller)

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[1]No guarentee on completeness and correctness.

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

Operator Theory (Prof. Dr. Forster-Heinlein)

Seminar:

- **Conformal Maps** (Prof. Dr. Forster-Heinlein)
- **Functional Analysis** (Prof. Dr. Prochno)

Module Group: "Dynamical Systems and Optimization":

Distributed Algorithms (Prof. Dr. Harks)

Mathematical Systems Theory (Prof. Dr. Wirth)

Seminar:

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

Module Group: "Stochastics, Statistics":

Computational Statistics: Regression in R (PD Dr. Schnurbus)

Econometric Methods (Prof. Dr. Haupt)

Seminar:

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

Modulgruppe: "Data Analysis and Data Management and Programming":

Data Science Lab (Prof. Dr. Granitzer)

Introduction to Deep Learning (Prof. Dr. Lemmerich)

Management of Scientific Data (Prof. Dr. Algergawy)

Principles of AI Engineering (Prof. Dr. Herbold)

Randomised Algorithms (Prof. Dr. Sudholt)

Modulgruppe: "Applications":

Approximate Dynamic Programming (Reinforcement Learning) (Prof. Dr. Otto)

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

Foundations of Energy Systems (Prof. Dr. de Meer)

Practical Course: Advanced Topics in management Science (Prof. Dr. Otto)

Quantitative Methods in Finance (Prof. Dr. Entrop)