

The Master's Program in Mathematics

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Department of Mathematics, University of Oslo

August 2023

Program structure

Program options

- ▶ Mathematics (MAT)
- ▶ Mathematics for applications (MFA)

Constituents

- ▶ Long or short master's thesis (60 or 30 credits)
- ▶ Courses (60 or 90 credits)

Master's agreement

- ▶ Supervisor
- ▶ Course plan
- ▶ Thesis problem
- ▶ **Deadline: December 1st 2023**

Common course in topology



- ▶ Fall 2023:
MAT4500 – Topology
- ▶ Recommended prior knowledge: MAT2400 – Real analysis
- ▶ Exemption if you have MAT3500 – Topology in your bachelor's degree

Program option Mathematics (MAT)

Common

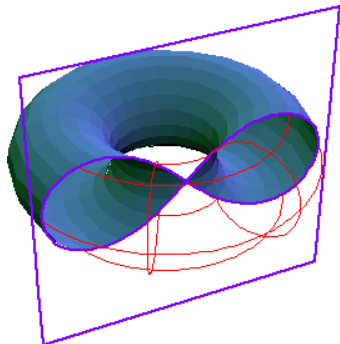
- ▶ MAT4500 – Topology

Specializations

- ▶ MAT42xx – Algebra/algebraic geometry
- ▶ MAT44xx – Operator algebras
- ▶ MAT45xx – Geometry/topology
- ▶ MAT48xx – Several complex variables

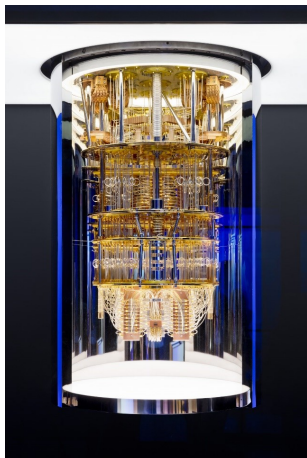
Algebra/algebraic geometry

- ▶ Fall 2023:
 - MAT4200 – Commutative algebra**
 - MAT⁹4270 – Representation theory
- ▶ Recommended prior knowledge:
 - MAT2200 – Groups, rings and fields
- ▶ Spring 2024:
 - MAT⁹4210 – Algebraic geometry I
 - MAT⁹4215 – Algebraic geometry II
 - MAT⁹4240 – Elliptic curves
- ▶ Other courses:
 - MAT⁹4230 – Algebraic geometry III
 - MAT4250 – Number theory



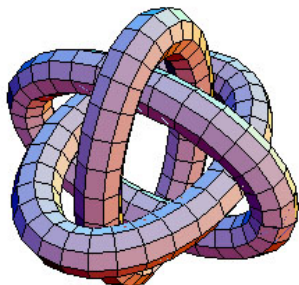
Operator algebras

- ▶ Fall 2023:
 - MAT4410 – Advanced linear analysis**
 - MAT⁹4460 – C*-algebras
- ▶ Recommended prior knowledge:
 - MAT3400 – Linear analysis with applications
- ▶ Spring 2024:
 - MAT4400 – Linear analysis with applications
 - MAT4430 – Quantum information theory
 - MAT4450 – Advanced functional analysis



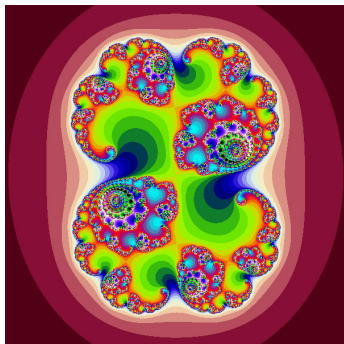
Geometry/topology

- ▶ Fall 2023:
 - MAT4510 – Geometric structures**
 - MAT⁹4270 – Representation theory
 - MAT⁹4540 – Algebraic topology II
- ▶ Spring 2024:
 - MAT⁹4520 – Manifolds
 - MAT⁹4530 – Algebraic topology I
- ▶ Other courses:
 - MAT⁹4551 – Symplectic geometry
 - MAT⁹4580 – Algebraic topology III
 - MAT⁹4590 – Differential geometry
 - MAT⁹4595 – Geometry and analysis



Several complex variables

- ▶ Fall 2023:
 - MAT⁹4800 – Complex analysis**
 - MAT⁹4810 – Introduction to several complex variables
 - MAT⁹4830 – Topics in complex analysis and dynamics
- ▶ Recommended prior knowledge:
 - MAT2400 – Real analysis
 - MAT2410 – Introduction to complex analysis
- ▶ Spring 2024:
 - MAT⁹4820 – Complex dynamics



Program option Mathematics for applications (MFA)

Common

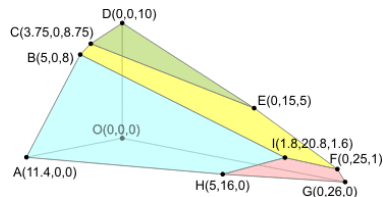
- ▶ MAT4500 – Topology

Specializations

- ▶ MAT41xx – Linear optimization and combinatorial matrix theory
- ▶ MAT43xx – Partial differential equations
- ▶ MAT47xx – Stochastic analysis

Linear optimization and combinatorial matrix theory

- ▶ Fall 2023:
MAT4110 – Introduction to numerical analysis
MAT⁹4120 – Mathematical optimization
- ▶ Required prior knowledge:
MAT3100 – Linear optimization
- ▶ Other courses:
MAT4130 – Numerical analysis
MAT⁹4170 – Spline methods



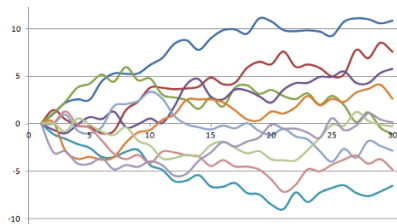
Partial differential equations

- ▶ Fall 2023:
 - MAT4301 – Partial differential equations
 - MAT-MEK⁹4270 – Numerical methods for partial differential equations
- ▶ Recommended prior knowledge:
 - MAT3360 – Introduction to partial differential equations
- ▶ Spring 2024:
 - MAT⁹4305 – Partial differential equations and Sobolev spaces I



Stochastic analysis

- ▶ Fall 2023:
 - MAT4410 – Advanced linear analysis**
 - MAT⁹4720 – Stochastic analysis and stochastic differential equations
 - MAT⁹4790 – Stochastic filtering
- ▶ Spring 2024:
 - MAT⁹4740 – Malliavin calculus and applications to finance
 - MAT⁹4750 – Mathematical finance: modeling and risk management
 - MAT⁹4760 – Advanced mathematical methods in finance
 - MAT⁹4770 – Stochastic modeling in energy and commodity markets



Other courses

Special curriculum

- ▶ For topics not covered by the regular courses

'Lektorprogrammet'

- ▶ MAT4010 – School mathematics from an advanced point of view

Specialization in logic

- ▶ MAT4630 – Computability theory
- ▶ MAT⁹4640 – Axiomatic set theory

Contact persons

Algebra/Algebraic geometry

- ▶ Arne B. Sletsjøe

Operator algebras

- ▶ Nadia Larsen

Geometry/topology

- ▶ John Rognes

Several complex variables

- ▶ Erlend F. Wold

Linear optimization and combinatorial matrix theory

- ▶ Geir Dahl

Partial differential equations

- ▶ Ulrik Skre Fjordholm

Stochastic analysis

- ▶ Salvador Ortiz-Latorre

Logic

- ▶ Lars Kristiansen

Further information

- ▶ www.uio.no/studier/program/matematikk-master/oppbygging/
- ▶ www.uio.no/studier/program/matematikk-master/spesialiseringer/
- ▶ www.mn.uio.no/math/personer/

Quiz

- ▶ Q: When is the deadline for the master's agreement?

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- ▶ Q: When is the deadline for the master's agreement?
- ▶ A: December 1st 2023