The Master's Program in Mathematics

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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

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/matematikkmaster/spesialiseringer/
- www.mn.uio.no/math/personer/

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

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- A: December 1st 2023