Nonlinear Optimization, 9.0 credits

Nonlinear Optimization, 9.0 hp

Third-cycle education course

6FMAI19

Dept of Mathematics

Valid from: First half-year 2023

Approved by
Head of Department

Approved

Registration number

Entry requirements

Calculus, linear algebra.

Contents

First-order methods (unconstrained and constrained optimization, accelerated methods, stochastic methods, nonsmooth methods, non-Euclidean methods), saddle point problems, variational inequalities, second-order methods.
The goal of the course is to give a broad overview of various optimization algorithms. Students will be introduced to popular modern optimization techniques in nonlinear optimization and better understand the need for optimization in machine learning, engineering, and data science.

Educational methods

One lecture per week.

Examination

One scribed lecture, homework assignments.

Grading

Two-grade scale

Course literature

1. A. Beck. First-Order Methods in Optimization, 2017.
2. D. Bertsekas. Convex optimization algorithms, 2015.
3. S. Boyd, L. Vandenberghe. Convex optimization, 2015.