

**Nonlinear Optimization, Equations and Least Squares, 9.0 credits**

Olinjär optimering, ekvationer och minsta kvadratmetoder, 9.0 hp

Third-cycle education course

6FMAI07

Department of Mathematics

Valid from: First half-year 2023

**Approved by**  
Head of Department

**Approved**

**Registration number**

## **Entry requirements**

Basic calculus, numerical linear algebra and optimization. Any gap in the background can be closed by students at the beginning of the course by intensive self-study with a help of the lecturer.

## **Specific information**

This course has been recommended by LiTH FoFu-nämnden as a "Fakultetsgemensam forskarutbildningskurs".

## **Contents**

Unconstrained optimization, constrained optimization, systems of simultaneous nonlinear equations, nonlinear least squares. Students will get acquaintance with the most effective numerical methods, many of which have been developed only in recent years.

## **Educational methods**

One lecture a week. Each topic is covered twice - first by the lecturer, then at the next meeting by a couple of students. Their presentation is followed by discussions.

## **Examination**

Active participation (at least 85% attendance), presentation of the course topics.

## **Grading**

Two-grade scale

## **Course literature**

Jorge Nocedal and Stephen J. Wright: *Numerical Optimization*, Springer, 2nd ed., 2006.