



# SF2526 Numerical algorithms for data-intensive science 7.5 credits

Numeriska algoritmer för vetenskapliga problem med stora datamängder

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

Course syllabus for SF2526 valid from Autumn 2020

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Mathematics

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

The general intended objective is to obtain understanding when the algorithms of the course work well and their implementation, justification and analysis. More specifically, after a completed course the student shall be able to

- implement linear algebra algorithms for topics of the blocks of the course;
- analyze when the algorithms of the course work well and their limitations, by using linear algebra tools;
- justify or derive methods of the course, using mathematical reasoning and relation to other numerical techniques;
- apply the methods of the course to solve scientific problems relevant for a sustainable society

## Course contents

The course is mainly focused on the algorithmic and practical computational aspects and applications in the following topics:

- Numerical algorithms for data-intensive least squares problems
- Numerical algorithms for large graphs, networks and clustering
- Numerical algorithms for distance measures and classification

## Specific prerequisites

- Completed basic course in numerical analysis (SF1544, SF1545 or equivalent) and
- Completed basic course in computer science (DD1320 or equivalent).

## Examination

- LAB1 - Laboratory work, 3.5 credits, grading scale: P, F
- TEN1 - Exam, 4.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.

- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.