FDD3402 Combinatorial Optimization 6.0 credits

Kombinatorisk optimering

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 FDD3402 valid from Spring 2012

Grading scale

Education cycle

Third cycle

Specific prerequisites

Language of instruction

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

Intended learning outcomes

After the course, the students should

- know basic concepts from polyhedral combinatorics

- be able to recognize several types efficiently solvable problems based on polyhedral techniques and matroids
- be able to understand techniques from combinatorial optimization used in research papers
- have an enhanced base of techniques to approach open algorithmic problems.

Course contents

The course aims to give a foundation of advanced techniques that lead to efficient exact algorithms. After an introduction to fundamental polyhedral concepts such as integral polyhedra and their connection to totally unimodular matrices, the course focuses on matroids and their connection to greedy algorithms.

The last part of the course introduces expander graphs from a combinatorial optimization point of view.

Examination

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.