FSF3843 Integer programming - Practical Algorithms 7.5 credits

Heltalsprogrammering - praktiska algoritmer

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 FSF3843 valid from Spring 2019

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

A Master degree including at least 30 university credits (hp) in in Mathematics (Calculus, Linear algebra, Differential equations and transform method), and further at least 6 hp in Mathematical Statistics, 6 hp in Numerical analysis and 6 hp in Optimization.

Suitable prerequisites are the courses SF2812 Applied Linear Optimization and SF2520 Applied Numerical Methods, or similar knowledge.

Language of instruction

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

Intended learning outcomes

That the student should obtain a deep understanding of the mathematical theory and the practical algorithms for integer programming.

After completed course, the student should be able to

- Define basic oncepts in polyhedral theory.
- Give different ways of generating valid inequalitises.
- Explain general methods for solving integer programs.
- Explain some special-purpose methods for solving integer programs.
- Explain fundamental concepts of computational complexity

Course contents

The course deals with theory and algorithms for linear integer programming problems and includes the theory of valid inequalities, duality and relaxations, general algorithms and special purpose algorithms. In addition, areas like model formulation, linear programming, computational complexity and polyhedral theory are treated on a relatively superficial level.

Disposition

Lectures

Course literature

Announced when the course is offered.

Examination

- INL1 - Assignment, 7.5 credits, grading scale: P, 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.

The examination is by homework assignments and a final oral exam.

Other requirements for final grade

Homework assignments and a final oral exam.

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.