SF2812 Applied Linear Optimization 7.5 credits

Tillämpad linjär 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 SF2812 valid from Autumn 2008

Grading scale

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

Education cycle

Second cycle

Main field of study

Mathematics

Specific prerequisites

Calculus, linear algebra, mathematical statistics, numerical analysis. A basic course in optimization.

Language of instruction

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

Intended learning outcomes

To deepen and broaden the theoretical and methodological knowledge in linear and integer programming.

To give training in the art of modeling and solving practical problems, and in presenting the results in talking and in writing.

Course contents

Theory and methods:

The simplex method and interior point methods for linear programming. Utlization of problem structure, e.g., decomposition and column generation. Stochastic programming, methods and utilization of problem structure. Branch-and-bound methods for integer programming. Lagrangian relaxation and subgradient methods for integer programming problems with special structure.

Projects:

This part of the course consists of modeling practical optimization problems and using available optimization software to solve them. The projects are carried out in small groups. An important aspect of the course is cooperation within the group as well as presentations in talking and in writing.

Course literature

To be announced at the beginning of the course. Preliminary literature:

Linear and Nonlinear Programming by S.G.Nash och A.Sofer, McGraw-Hill, and some material from the department.

Examination

- PRO1 - Project, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO2 - Project, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 4.5 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.

Other requirements for final grade

A written exam and projects.

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.