Discrete Optimization, 6.0 credits

Diskret optimering, 6.0 hp

Third-cycle education course

6FMAI29

Dept of Mathematics

Valid from: First half-year 2025

Approved by
Head of Department

Approved
2025-01-17

Registration number
DNR MAI-2025-00007

Entry requirements

Undergraduate courses in mathematics, optimization and computer science.

Learning outcomes

The course gives a broad orientation of the mathematical foundations of discrete optimization, including basic modeling, theory and solution methods. It is intended for students in scientific disciplines where discrete optimization can serve as tool in research and development, such as operations research, management science, logistics management, engineering design, computer science, and electrical engineering.

Contents

Fundamentals of integer programming, modelling and examples of discrete optimization models, linear inequalities and polyhedra, perfect formulations, split and Gomory inequalities, valid inequalities for structured integer programs, reformulations and relaxations, enumeration, semidefinite bounds.

Educational methods

Seminars where the participants present the course topics and solutions to selected exercises from the course book.

Examination

Active participation with presentations of topics from the course book and solutions to exercises.

Grading

Two-grade scale

Course literature

Integer Programming by Conforti, Cornuéjols and Zambelli, Springer, 2014.