Combinatorial Optimization

(Patrick Meyer & Arwa Khanoussi)

This course delves into the use of mathematical models for optimal decision-making in complex situations. It covers a range of techniques from linear programming to meta-heuristics, preparing students to tackle problems with competing goals and unpredictable factors.

Key concepts covered:

- Linear programming formulation and solution methods
- Meta-heuristics for complex optimization problems
- Multi-objective optimization techniques
- Decision-making under uncertainty
- Robust optimization methods
- Real-world applications of operations research

By the end of this course, students will be able to:

- [BC-03] Make robust decisions in situations with conflicting priorities and uncertain information
- [BC-04] Formulate and solve complex combinatorial optimization problems using appropriate mathematical models
- [BC-07] Develop and apply meta-heuristics for problems too complex for exact solutions

Prerequisites:

- Being familiar and efficient with Python programming