Combinatorial optimization

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

- **Ametys Code:** N9EE17C
- **Open to exchange students:** Yes

Presentation

Objectives

- Understand the fundamental concepts and specificities of combinatorial optimization (notions of complexity, combinatorial explosion, etc.)
- Identify and model issues from different fields or specifications in the form of combinatorial optimization problems
- Solve combinatorial problems using exact tree methods (branch-and-bound) to guarantee the optimality of the solutions obtained
- Design metaheuristic approximation methods (genetic algorithms, tabu search, etc.) to generate solutions adapted to the context, without guaranteeing optimality but with limited execution time
- Implement the proposed algorithms and evaluate their performance on case studies from different fields: computer science, logistics, industrial engineering, etc.

Description

This course focuses on modeling and approximate or exact solving of NP-hard combinatorial optimization and decision problems encountered in various fields.

Pre-requisites

linear programming