UE Combinatorial optimization and graph theory

Level
Baccalaureate +5

ECTS
6 credits

Component
UFR IM2AG (informatique, mathématiques et mathématiques appliquées)

Semester
Automne

- **Teaching language(s):** English
- **Open to exchange students:** Yes
- **Code d'export Apogée:** GBX9CO02

Presentation

Description

The aim of this course is to provide a broad knowledge of fundamental problems in Combinatorial Optimization to show their algorithmic solutions and to derive min-max results on them. In order to achieve this goal a new object called a polyhedron is introduced. This polyhedral approach helps to shed new light on some classic results of Combinatorial Optimization.

Syllabus: Study of polyhedra associated to problems of Combinatorial Optimization ; Theory of blocking polyhedra ; Connectivity: shortest paths, spanning trees and spanning arborescences of minimum weight ; Flows: Edmonds-Karp Algorithm, Goldberg-Tarjan Algorithm, minimum cost flows ; Matchings: Hungarian method, Edmonds' Algorithm, Chinese postman problem; Matroids: greedy algorithm, intersection of two matroids ; Graph coloring ; Applications coming from various areas of Operations Research.

Course parts

CM	Lectures (CM)	36h

Period : Semester 9

Useful info

Contacts

Program director

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Place

Grenoble

Campus

Grenoble - University campus