Programmation Mathématique

ECTS : 3

Volume horaire : 15

Description du contenu de l'enseignement :

This course delves into the realm of Mathematical Programming, exploring its applications in solving real-world problems across diverse domains. Various concrete problems find formulation through linear and integer linear programming. The primary objective of this module is to scrutinize the modeling and resolution methods for such problems, grounded in linear programming and integer programming. Here is a possible list of contents, which might change according to the current trends or the lecturer's inclinations.

- Ingredients of combinatorial optimization
- Linear programming
- Solution methods: Graphical solution, Simplex algorithm
- Duality
- Integer programming
- Solution methods: Branch-and-Bound, Cutting planes, Branch-and-Cut
- Perfect formulations

Compétence à acquérir :

At the end of this course, students will have developed expertise in modeling and solving real-world and combinatorial optimization problems through mathematical programming. They will be able to formulate and solve concrete challenges using methods such as linear programming and integer programming, as well as advanced optimization techniques.

Mode de contrôle des connaissances :

A final exam on paper

Bibliographie, lectures recommandées :

- Integer Programming, Michele Conforti, Gérard Cornuéjols, Giacomo Zambelli. Springer (2014).
- Theory of Linear and Integer Programming, Alexander Schrijver. Wiley (1998).

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