**MATH-265**

*Introduction to optimization and operations research*

Bierlaire Michel

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<th>Cursus</th>
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<td>Chimie</td>
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<td>Opt.</td>
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<td>Génie civil</td>
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<td>Génie mécanique</td>
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<td>Sciences et ingénierie de l'environnement</td>
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**Remarque**

Les exercices sont donnés à raison de deux heures toutes les deux semaines.

**Summary**

Introduction to major operations research models and optimization algorithms

**Content**

Week 1: introduction to the course

Weeks 2 & 3: Linear optimization - introduction

Weeks 4 & 5: The simplex algorithm

Weeks 6 & 7: Networks and duality

Week 8: mid-term exam

Weeks 9 & 10: Transhipment and shortest path.

Weeks 11 & 12: Integer optimization - Branch and bound.

Weeks 13 & 14: Unconstrained non linear optimization.

**Learning Prerequisites**

**Required courses**

- Linear algebra
- Analysis

**Teaching methods**

The course is organized on the concept of "flipped classroom". Each of the six topics spans two weeks. During the first week, the students review the available material (book, videos, exercises). During the second week, the course in the class focuses on difficult aspects, examples, and responses to questions. Exercises are also organized the same way. They are organized in class every over week.

**Assessment methods**

Written exam

**Resources**

Bibliography
Prerequisite for
"Le contenu de cette fiche de cours est susceptible d'être modifié en raison du covid-19"