

MATH-265

Introduction to optimization and operations research

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Cursus	Sem.	Type
Chemistry	BA5	Opt.
Civil Engineering	BA3	Obl.
Environmental Sciences and Engineering	BA5	Opt.
HES - GC	H	Obl.
HES - GM	H	Obl.
Mechanical engineering	BA5	Obl.
Systems Engineering minor	H	Opt.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
Hours	4 weekly
Courses	2 weekly
Exercises	2 weekly
Number of positions	

Summary

Introduction to major operations research models and optimization algorithms

Content

introduction to the course
 Linear optimization - introduction
 The simplex algorithm
 Duality
 Networks
 Transshipment
 Shortest path
 Integer optimization - Branch and bound.
 Unconstrained non linear optimization.

Learning Prerequisites**Required courses**

Linear algebra
 Analysis

Teaching methods

The course is a combination of ex-cathedra lectures, interactive sessions and exercises. Interactive sessions allow the student to verify if the main concepts have been well understood.

Assessment methods

Written exam

Resources**Virtual desktop infrastructure (VDI)**

No

Bibliography

Bierlaire (2015) Optimization: principles and algorithms, EPFL Press

<http://optimizationprinciplesalgorithms.com>

Ressources en bibliothèque

- [Optimization / Bierlaire](#)

Moodle Link

- <https://go.epfl.ch/MATH-265>

Prerequisite for