MGT-530

Digitalization & sustainable logistics

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Cursus	Sem.	Type
Managmt, dur et tech	MA2, MA3	Obl.

Language of teaching	English
Credits	3
Withdrawal	Unauthorized
Session	Winter, Summer
Semester	Spring
Exam	During the semester
Workload	90h
Weeks	14
Hours	**3 weekly**
Courses	2 weekly
Project	1 weekly
Number of positions	**40**

It is not allowed to withdraw from this subject after the registration deadline.

Summary

In this course, we address quantitatively the operational aspects linked to the management of supply chains. Focusing on practical situations, focus will be paid on the optimization of logistics systems, in particular when the objective is to minimize their associated environmental footprint.

Content

- Chapter 0: Course Description
- Chapter 1: Introduction
- Chapter 2: Mathematical Programming
- Chapter 3: Supply Chains and Logistics
- Chapter 4: The Travelling Salesman Problem
- Chapter 5: The Vehicle Routing Problem and Heuristics
- Chapter 6: Variants of the Vehicle Routing Problem
- Chapter 7: Evolutions in the Logistics Sector
- Chapter 8: Packing Problems
- Chapter 9: Facility Location Problems
- Chapter 10: Supply Chains and Sustainability

Keywords

- Logistics
- Optimization
- Sustainability

Learning Prerequisites

Important concepts to start the course

- Basic knowledge of Python

Learning Outcomes

By the end of the course, the student must be able to:

- Analyze and differentiate the different components that are composing the supply chain

- Recognize and perform to the mathematical modeling of typical situations arising in logistics systems
- Solve these models by using various tools from operations research, ranging from exact approaches to heuristics
- Analyze the results and draw managerial insights accordingly

Assessment methods

- Mid-term quiz: 30%
- Team project: 70%

Supervision

Office hours	No
Assistants	Yes
Forum	Yes

Resources

Bibliography

- *A Gentle introduction to optimization,* B. Guenin, J. Könemann and L. Tunçel, Cambridge University Press, 2014

Ressources en bibliothèque

- A Gentle introduction to optimization / Guenin

Notes/Handbook

- Slides will be provided

Moodle Link

- https://go.epfl.ch/MGT-530