**EPFL**

MGT-530     **Sustainable logistics operations**

Gallay Olivier

| Cursus | Sem. | Type |
|---|---|---|
| Managmt, dur et tech | MA2 | Obl. |

| | |
|---|---|
| Language of teaching | English |
| Credits | 3 |
| Withdrawal | Unauthorized |
| Session | Summer |
| Semester | Spring |
| Exam | During the semester |
| Workload | 90h |
| Weeks | 14 |
| **Hours** | **4 weekly** |
| Lecture | 2 weekly |
| Project | 2 weekly |
| **Number of positions** | **40** |

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

**Summary**

We address quantitatively the management of logistics operations, focusing notably on their environmental impact. Considering practical situations, focus is 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

**Learning Outcomes**

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

• Distinguish the different components that are composing the supply chain and be aware of logistics situations that arise commonly

• 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 methods to heuristics

• Analyze the results and draw managerial insights accordingly

**Transversal skills**

• Write a scientific or technical report.

• Make an oral presentation.

• Use both general and domain specific IT resources and tools

- Demonstrate the capacity for critical thinking
- Take responsibility for environmental impacts of her/ his actions and decisions.
- Set objectives and design an action plan to reach those objectives.
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Demonstrate a capacity for creativity.

**Teaching methods**

- Weeks 1 to 8 : course (in-class) and practical sessions (in-class)
- Week 9 : mid-term quiz (in-class)
- Weeks 10 to 13 : individual group meetings for the project (online)
- Week 14 : project presentations (in-class)

**Assessment methods**

- Mid-term quiz: 40%
- Team project: 60%

**Supervision**

| Office hours | No |
|---|---|
| Assistants | Yes |
| Forum | Yes |

**Resources**

**Virtual desktop infrastructure (VDI)**

No

**Bibliography**

- (optional) 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

**Moodle Link**

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