## **Course unit: Optimization**

• Title in French: Optimisation

Course code: tbaECTS credits: 1Teaching hours: 25hType: elective course

Language of instruction: FrenchCoordinator: Magali Tournus

• Instructor(s): Olivier Lafitte, Magali Tournus

• Remark(s): shared course with 3r year track DIGITAL.e

## **Brief description**

This course is an elective course aimed at anyone interested in optimization.

## **Learning outcomes**

- Know how to solve a problem of functional minimization using Lagrange multipliers
- Understand the application to classical problems of calculus of variations
- Know how to build some minization algorithms

## **Course content**

- 1. Gâteaux and Fréchet derivatives, Euler inequations, Taylor formula, Farkas lemma, Local inversion and Lagrange multiplier.
- 2. Convex programs (up to Kuhn & Tucker), application to the quadratic case and to the equivalence with the symmetric variational formulation.
- 3. Algorithms: relaxation and the four gradients; convergence rate
- 4. Introduction to optimal control

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