Code: MAT7006  
**Optimization Methods**  
ECTS: 6  
Language: English

**Period:** S7

**Organisation:**  
Face to face: 42 hours  
Homework: 42 hours  
total load: 84 h

**Objectives:**  
Acquiring some notions of optimization in continuous, discrete or mixed spaces and their relationship with concrete applications.

**Prerequisites:**  
Basic Calculus, Basic Algebra

**Program:** -

**Content:**  
- Dynamic programming  
- Branch and Bound methods  
- B&B and the Travelling Salesman problem : the Little algorithm  
- Linear Programming : the simplex algorithm  
- Unconstrained non-linear Programming : gradient methods, Newton method, quasi-Newton methods  
- Metaheuristics for hard optimization : Taboo Search, Evolutionary Computation, Simulated Annealing  
- Applications to Pattern Recognition : elastic distance, Dynamic Time Warping, gradient methods in neural networks, etc.

**Evaluation:** Grading is as follows  
Continuous exam  
Written examination

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