

### Partial Derivative Equations & Monte Carlo methods



4 crédits



Hourly volume 53h

# Introducing

### **Objectives**

At the end of this module, the student will have understood and be able to explain (main concepts): PDE

- The four fundamentals PDE models, with their solution behaviors
- The Finite Difference discretization method

#### Monte-Carlo

- The fundamental principles of simulating random variables and Monte-Carlo methods.

The student will be able to:

- PDE
- To model basic fundamental phenomena by employing PDE
- To derive a Finite Difference scheme (consistent, stable, convergent).

#### Monte-Carlo

- Simulate a random variable by different methods, use probabilistic, choose appropriate techniques for variance reduction and error estimation.

#### Basic numerical methods

Monte-Carlo A basic course on probabilities.

## Practical info

### Location(s)

Toulouse

### Necessary prerequisites

EDP

Differential calculus, analysis, ODE

