Partial Derivative Equations & Monte Carlo methods

ECTS
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.

Necessary prerequisites

EDP
Differential calculus, analysis, ODE

Basic numerical methods

Monte-Carlo
A basic course on probabilities.

Practical info

Location(s)

Toulouse