

Stochastic control

ECTS : 6

Volume horaire : 24

Description du contenu de l'enseignement :

PDEs and stochastic control problems naturally arise in risk control, option pricing, calibration, portfolio management, optimal book liquidation, etc. The aim of this course is to study the associated techniques, in particular to present the notion of viscosity solutions for PDEs.

- Relationship between conditional expectations and parabolic linear PDEs
- Formulation of standard stochastic control problems: dynamic programming principle.
- Hamilton-Jacobi-Bellman equation
- Verification approach Viscosity solutions (definitions, existence, comparison)
- Application to portfolio management, optimal shutdown and switching problems