Finance in continuous time (mandatory course, unless validated previously)

**ECTS** : 6

**Description du contenu de l'enseignement :**

Asset pricing, contingent claim, stochastic process, brownian motion, Itô's formula, optimal stopping time. This course is an introduction to "Derivative pricing and stochastic calculus II". It introduces the standard concepts and tools allowing to understand arbitrage theory in continuous-time. The requirements from probability theory are made as basic as possible to make the lectures accessible to studends without a strong background in applied mathematics.

**Compétence à acquérir :**

In the end of this course, the students must be comfortable with:

i) Basic concepts of contingent claims,

ii) the binomial model;

iii) stochastic integrals and Itôs calculus;

iv) the Black and Scholes model,

v) Merton's optimal porfolio problem.

**Bibliographie, lectures recommandées :**

Steven Shreve, Stochastic Calculus for Finance I: The Binomial Asset Pricing Model, 2005. Steven Shreve, Stochastic Calculus for Finance II: Continuous-Time Models , 2005.

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