

Introduction to quantitative finance

**ECTS** : 3

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

The goal of this course is to provide a good background in quantitative finance. After some reminders on probability theory (change of probability measure, random variables, usual distributions, conditioning), the course is planned as follows:

1) Classical financial market modeling: stochastic basis, stochastic processes, price processes and self financing portfolio processes in discrete-time. Examples of price dynamics and portfolio dynamics in continuous time; interpretation by discretization.

2) Fundamental theorem of asset pricing; pricing of European and Asian options.

3) Examples of pricing by Monte Carlo numerical simulations. Programming in Python applied to classical models, e.g. the Black and Scholes model.

**Compétence à acquérir :**

Théorie des probabilités et mathématiques financières.

**Document susceptible de mise à jour - 03/04/2026**

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