

## 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.

### **Bibliographie, lectures recommandées :**

<https://www.amazon.com/Quantitative-Finance-Beginners-Stochastic-European/dp/B0C6BMGWGH>