Derivative pricing & Stochastic calculus I

ECTS : 3

Description du contenu de l'enseignement :

Course Objectives:

The primary aim of this course is to provide students with a comprehensive understanding of dynamic stock models and derivative securities. We will delve into essential mathematical concepts, illuminating the fundamental techniques for pricing and hedging in both discrete and continuous time. These concepts are pivotal for prospective professionals in numerous finance sectors.

Course Breakdown:

1. Probability Theory Refresher
2. Arbitrage
3. Binomial Pricing Model
4. Dynamic Strategies in Multiple Periods
5. Continuous-Time Models and Stochastic Calculus 6. Portfolio Dynamics & Stochastic Integration
7. Black & Scholes Model

Support Class for M1-level Students:

Complementing the main course, this support class seeks to solidify the understanding and application of concepts explored in 'Derivatives Pricing and Stochastic Calculus 1'. Beginning with a concise recap of salient class content, the support course then emphasizes the real- world financial application of these principles. The structure of the main course is mirrored in this supplementary class to optimize the integration and mutual reinforcement of the two courses.

Compétence à acquérir :

The "Derivative Pricing & Stochastic Calculus 1" course aims to equip students with a comprehensive understanding of dynamic stock models and derivative securities, emphasizing mathematical concepts for pricing and hedging in both discrete and continuous time.

Mode de contrôle des connaissances :

Assessment

1 mid-term exam (30%), 1 final exam (70%)

Bibliographie, lectures recommandées :

References

Shreve, S. (2005). Stochastic calculus for finance I: the binomial asset pricing model. Springer Science & Business Media.

Shreve, S. E. (2004). Stochastic calculus for finance II: Continuous-time models (Vol. 11). New York: springer.

Back, K. (2005). A course in derivative securities: Introduction to theory and computation. Berlin: Springer.