

MASTER OF SCIENCE IN WEALTH MANAGEMENT

MAÎTRISE UNIVERSITAIRE EN GESTION DE PATRIMOINE

DERIVATIVES AND STRUCTURED PRODUCTS (S413045)

Prof. Tony BERRADA

6 ECTS

Semester: Spring

Teaching language: English

Description

The first part of the course develops the modern framework of option pricing with an emphasis on martingale methods. After discussing the general approach, we study several specific models related to stochastic and local volatility. We also discuss the use of numerical methods for complex valuation problems. In particular we study in details the Monte Carlo simulation approach.

The second part of the course focuses on structured equity derivatives and analyzes how these financial instruments are designed to solve financial economics problem. This section of the course is more focused on financial architecture than on financial engineering. We study in details special features of option contracts (knock-in knock-out) and index-linked cash flows inherent in many structured products.

References

Class notes and exercises are available on chamilo.unige.ch

- Harry M. Kat, Structured equity derivatives, Wiley Finance.
- Steven E. Shreve, Stochastic calculus for finance volumes I and II, Springer Finance.
- D. Lamberton, B. Lapeyre, Introduction au calcul stochastique appliquée à la finance, Ellipses.
- Pascal Francois, Les produits dérivés financiers - Méthodes d'évaluation, Dunod.

Course Evaluation

Written Exam	:	40 % (The exam is closed-book.)
Group Project	:	40 %.
Presentation	:	20 %

The project structure is as follows

1. Develop a structured equity derivative and explain what type of financial economic problem it is solving. Explain what the target clientele is and how to market this product.
2. Explain how to price and hedge this equity derivative product. Write a matlab code to perform a complete analysis of the pricing and hedging problem.

The group project and presentation format will be extensively discussed in class.