Financial Derivatives

ECTS : 3

Description du contenu de l'enseignement :

The objective of this course is to give an all round comprehensive knowledge and understanding of the theory and the day-to-day use of derivatives contracts.
This course aims at “demystifying” key derivatives products, widely used to hedge existing market risks, to speculate on the future movements of market variables or more generally to taylor the return distribution of a portfolio. Participants will learn how banks and corporate treasuries use Financial Options alike in the management of risks, for trading, hedging and arbitrage and their role in the day-to-day running of the finances of businesses.
Starting from some basic knowledge of cash equity and equity derivatives market, and based on real option trade ideas capitalizing on a “nuanced” market view, it equips the audience with the skills to price and risk manage the most common and complex options, by explaining and dissecting the risks associated with trading a derivative from a risk/return/cost perspective by means of real life examples. For each option, from vanilla to exotics and structured products, this course makes clear why there is an investor demand, explains where the risks lie and how this affects the actual pricing, shows how best to hedge them.
The class uses MS Excel Spreadsheet applications and Visual Basic extensively, involving the use of market data and Equity Market Research publications.

Course outline
I Derivatives products features overview II Capitalizing on a “nuanced” view using derivatives III Arbitraging using derivatives IV Hedging using derivatives

- Derivatives Markets Overview
- Options Pricing framework
- Specific market situations where derivatives go beyond cash
- Tailoring a derivatives strategy to a specific market situation and fundamentals
- Capitalizing on a risk/return/cost profile using derivatives: from protection to yield enhancement derivatives strategies
- Asymmetry between market rise and fall: “the skew”
- Short-term crash fears: jumps and “fat tails”
- Long-term uncertainty: volatility term structure trades
- Dynamic hedging: “Delta hedging” using Futures (discrete hedging & transaction costs, Delta Greek features -vs. stock level, time, “shadow delta”)
- Static hedging: trading “Gamma and Vega hedging” using options (Gamma & Vega Greeks features, illustrations of Gamma-Vega hedging)
- P&L and hedging issues (Gamma-Theta P&L computation & pattern, impact of option maturity and Time decay, P&L and Options portfolio rebalancing frequency)
- Stylized facts of volatility empirics

Compétence à acquérir :

Binomial Tree, basic stochastic calculs

Mode de contrôle des connaissances :

Grading: Homeworks (trade idea on corporates, VBA project on options portfolio) + Final Exam

Bibliographie, lectures recommandées :

John C. Hull: Options, Futures, & Other Derivatives, Prentice Hall Paul Wilmott: Derivatives: The Theory and Practice of Financial Engineering Sheldon Natenberg: Option Volatility and Pricing: Advanced Trading Strategies and Techniques Nassim Nicolas Taleb: Dynamic Hedging: Managing Vanilla and Exotic Options