Università degli Studi di Milano-Bicocca

Master in Finance and Risk Management
FINARM

Accademic Year 2005/2006

Course: Financial Engineering

Syllabus

Futures, Options and Swaps - definitions

Trading strategies – hedging, arbitrage and speculation

Fundamental theorems of Asset Pricing and Risk-neutral evaluations

Replicating portfolio techniques and Martingale methods

Stochastic processes for financial markets

Partial Differential Equations for financial markets

Bundling and Unbundling Structured Products (SP)

SP pricing analytics: jumps, stochastic volatility and interest rate, credit risk modelling via Monte Carlo simulation

SP risk measurements via market implied probability distributions

Decoupling the information embedded in SP implied probability distribution: trajectory-by-trajectory techniques vs reduction in granularity through superimposition with the risk-free asset

SP overall riskiness analysis via volatility based indicators

SP optimal investment time horizon via first passage time distributions.

SP Risk Management: Greeks, Value at risk and Expected Shortfall

Case studies: structured bonds, covered warrants, reverse convertible and certificates