

Two – day Course Outline **on Pricing and Structuring of Interest Rate Derivatives**

Day 1: Familiarisation and structuring of interest rate derivatives

Session 1: Interest rate volatility and importance of interest rate derivatives

- Why do interest rates fluctuate
- Long term and short term fluctuations
- Understanding asset liability mismatch and interest rate risk
- Impact of interest rate fluctuations on prices of fixed income securities and fixed income products
- Different interest rate derivatives – meaning and significance of each
- Hedging and trading motives

Session 2: Structuring of interest rate derivatives

- Structuring examples of each of the major interest rate derivatives
- Interest rate swaps
- Forward rate agreements
- Interest rate futures
- Caps and collars
- Option contracts

Session 3: Dynamics of Structured Swaps

- Basis Swaps
- Index Differential Swaps
- Accrual/Trigger Swaps
- Case studies of index differential swap
- Case Study - CMS Spread Range Accrual Swap

Session 4: Other important interest rate linked products

- Target redemption notes (TARNS)
- Inverse floaters
- Callable swaps
- Case Study - Callable Swap

Day 2: Pricing of interest rate derivatives

Session 1: Basics of option pricing

- Introduction to basic random process
- Pricing a simple interest rate swap – convexity adjustments and delay
- Variants in Interest Rate Swaps – cases
- Yield curve interpolation
- Pricing Caps and Swaptions

Session 2: Short rate modeling - Hull White model

- What does short rate mean?
- Introduction to Vasicek, Hull White and Black Karazinski short rate models
- Building and calibration of short rate lattice models
- Pricing a cap and floor using lattice model
- Pricing swaptions using lattice model

Session 3: Introduction to Market Models

- Heath Jarrow Merton Model
- Drawbacks of the short rate models
- Comparative advantages of market models over short rate models
- Fundamental dynamics of market models

Session 4: Introduction to BGM Model (Libor Market Model)

- Building blocks for model construction
- Assumptions on model volatilities and correlations
- Compatibility issues of model with both cap & swaption data
- Calibration of the model

Session 5: Pricing derivatives using the model

- Monte Carlo simulation process
- Pricing examples for Caps/floors using the model
- Pricing examples for Swaptions using the model
- Pricing of early exercise structures using the model