Fixed Income Securities, Term Structure Modelling & Trading

FRE 6411
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Lecture 1: Introduction to Fixed Income Securities, Risk and Volatility Measurements and Control. Discrete Stochastic Models
- Introduction to US Government Bonds, Notes and Zero-Coupon
- Duration and First Order Risk Measurements
- Convexity and Higher Orders Risk Measurements
- Optimal Risk Control and Trading
- Binominal & Trinominal Models

Lecture 2: Arbitrage Trading and Arbitrage Free Valuation
- Arbitrage Trading Strategies, Dynamic Programming, Mimicking Portfolio
- Arrow-Debreu Equilibrium and State Prices
- Risk Neutral Valuations & Complete Markets

Lecture 3: Interest Rate Swaps Forward and Future Contracts
- Swaps, Future and Forward Contracts Valuations
- US and International Government Bonds Futures Contract
- CBOT 10 Year US Treasury Note Futures Contract Valuation with Delivery Option, Option Adjusted Duration and Convexity
- Australian 10 Year Commonwealth Treasury Bond Futures Contract
COURSE OUTLINE

- Lecture 4-1: Term Structure Modelling & Trading
  - Term Structure of Interest Rate
  - Term Structure of Volatility and VIX
  - Term Structure of Commodities

- Lecture 4-2: Term Structure Modelling & Trading
  - Cubic Spline Modelling & Trading
  - Nelson-Siegel Modelling & Trading
  - Central Banks Estimation of Constant Maturity Yield Curve

- Lecture 5: Affine Term Structure, Pricing & Trading

- Lecture 6: High Frequency & Real Modelling & Trading
  - Introduction to High Frequency Modelling
  - Real Time and High Frequency Modelling of Volatility Term Structure and Trading
  - Real Time and High Frequency Modelling of Constant Maturity Curve and Trading