MF702 Fundamentals of Finance

Course Outline

Topic 1 Introduction to Financial Markets
- Financial securities
- Forward, future
- Option
- Arbitrage

Topic 2 Future Markets
- Prices of forward and future
- Specifics of a future contract

Topic 3 Option and Binomial No-Arbitrage Pricing Model
- Specifics of an option contract
- One-period binomial model
- Multiperiod binomial model
- State prices
- American derivative securities

Topic 4 Option trading and risk management
- Trading options
- Implied volatility, volatility smile
- Greeks

Topic 5 Overview of debt markets
- Overview of debt contracts and classification of debt securities
- Players and their objectives
- Government debt markets
- The money market
- The repo market
- MBS and ABS markets
- Fixed income derivatives markets
- Risks of debt securities

Topic 6 Deterministic cash flows
- Discounting factor, time value for money
- Zero coupon and coupon bonds
- Spot rate, forward rate, par rate
- Yield to maturity, yields curve
- Treasury bonds and treasury yield curve

Topic 7 Interest rate risk management
- DV01, duration, convexity
- Portfolio duration and convexity

- Hedging based on duration and convexity
- Yield curve strategies
- One factor models vs. multiple factor models
- Principal component analysis for treasury yield curve

Topic 8 Fundamental Theorem of Asset Pricing

Topic 9 Commodities and derivatives

Topic 10 Utility and Utility Based Pricing

Topic 11 Mean-variance problem and CAPM

Readings

All relevant material will be covered in the lecture notes and slides. Recommended reading:

Stochastic Calculus for Finance I: The Binomial Asset Pricing Model, by Steven E. Shreve

Options, Futures, and Other Derivatives, by John C. Hull

Lectures: Wed 8-10:45am in HAR 304 (Section D1)
Wed 12:30-3:15pm in HAR 312 (Section D2)

Instructor: First half: Hao Xing
office: 546C
email: haoxing@bu.edu
office hours: Monday and Wednesday 9-10pm
Second half: A sequence of professors

Teaching Assistants: Yuyang Zhang email: yyz@bu.edu
Office hours:
Fanwei Wei email: fanwei@bu.edu
Office hours:

Grading: The grade for the entire course (first and second half) will be determined as follows:

Homework and projects: 50%
Midterm: 25%
Final: 25%
Both exams will be online and open book