

FINA222 – Introduction to Derivatives

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Teaching Assistants:

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Course Description: This course consists of two parts. The first part of the course deals with options markets, which include: trading strategies, Black Scholes model, Greek numbers, binomial trees, and exotic options. The second part of the course deals with the structure of forward and futures markets, pricing of futures contracts, interest rate derivatives, swaps and hedging with such contracts. The course will consist of lectures, tutorials, case discussions, and market tracking.

Motivation of Learning Derivatives

- Derivatives is extremely important in this region, especially to the China market.
- Index futures in China is expected to launch in the near future – what does it mean?
- Then, index options will follow – what is its implication?
- Then, China markets will be changed from one-directional into two-directional or even multi-directional (just consider volatility)
- Many derivative products, or even structured products, will come very soon, such as capital protection or yield enhancement funds. This will be the next step in your learning of equity derivatives.
- In this course, I will cover not only the materials in the textbook, but also will guide you to think the things that happened or happening in the real world to develop your **market sense**.

Besides the tutorials provided by our TA, I will provide three additional tutorials for students who like to learn more advanced topics in derivatives (contents will not be covered in mid-term or final exam). In these three tutorials, I will cover estimation of volatility, volatility surface and smile, Monte Carlo simulation, and pricing of simple market traded products.

Class Schedule

- **Week 1:** Overview of Options, Futures, and Derivatives
- **Week 2:** Options and Warrants
- **Week 3:** Option Analysis and Modeling: The Binomial Tree Approach
- **Week 4:** Option Trading Strategy (Announce Term Project)
- **Week 5:** Black-Scholes-Merton Model for Option Analysis
- **Week 6:** The Greeks and Hedging Strategies
- **Week 7:** Exotic Options
- **Week 8:** Mid-term
- **Week 9:** Forward and Futures Contracts
- **Week 10:** Introduction to Interest Rates and the Value of Future Cash
- **Week 11:** Interest Rates, FRAs & Forward and Futures Prices (Term Project Due)
- **Week 12:** Interest Rates, IR Forwards, and Futures
- **Week 13:** Swaps
- **Week 14:** Course Wrap-up

Grading:

Mid-term: 30 percent

Final: 30 percent

Group project: 30 percent (up to four team members)

Participation: 10 percent