

FINANCE 422 *Speculative Markets and Derivative Securities* Syllabus
University of Miami, Spring Break Intersession
Section B80 / U80: March 9-17, 2019, 14:00 – 18:10, Location: SB502

Instructor: Dr. Tie Su, CFA
Office: 514G Jenkins Building, Miami Business School
Office Phone: (305) 284-1885 (office), (305) 284-4362 (department)
E-mail: tie@miami.edu
Web: <http://moya.bus.miami.edu/~tsu/>; <http://www.linkedin.com/in/tiesu>;
Office Hours: Monday, Wednesday, and Friday 18:10-19:00 pm and by appointment

Course Descriptions:

Finance 422 provides an introduction to the fastest growing areas in derivative securities. It builds on FIN302/303/320/330/405/421/425/427 to provide insights to the nature of financial derivatives and applications of such instruments used in an investments and corporate setting. This course is divided into three parts: (1) options; (2) futures and forwards; and (3) swaps. Emphasis is placed on derivatives on equity instruments (stocks and stock indices) although short and long term interest bearing instruments (Treasury securities, LIBOR, etc.) are also discussed in detail.

Materials:

An Introduction to Derivatives and Risk Management, Don Chance and Robert Brooks, Thomson South-Western, 7th edition, ISBN: 0324321392, or 8th edition, ISBN: 0324601212, or 9th edition, ISBN: 9781133190202 or 1133190197, or 10th edition, ISBN: 9781305104969. Lecture notes will be posted online.

Assignments:

In addition to exams, there are homework exercises involving the pricing and trading of derivative securities. You are required to write spreadsheet programs related to derivative securities.

Finance is a highly quantitative field. Understanding and solving quantitative problems are the emphasis of this course. Homework problems from the text will be assigned but will not be collected or graded. These problems are designed to help you to understand the underlying concepts. The solutions to all end-of-chapter exercises are available online. **You need to bring your financial calculator to every class.**

Grading:

There will be two exams (**Day #5 and Day #9**). The mid-term exam score receives 35% of the weighting and the final exam score receives 45%. Excel programming (**due on Day #4**) project 20%. I do not give makeup exams. I do not give extra projects/exams/papers to make up for under-performance.

Course Objectives:

- Understand the structural differences among options, forwards, futures, and swaps.
- Understand how the above derivative securities are traded in exchanges and/or over-the-counter markets.
- Understand how to price each of the above derivative securities with different pricing models and know model assumptions.
- Understand how to use these derivative securities for hedging and/or speculation purposes.

Specifically:

- Options:
 - Differences between options and forwards
 - Options payoff/profit profiles for both buyer and seller of options
 - Market place of options
 - Option pricing models: the Black-Scholes model and binomial tree model
 - Hedging and speculation with options
- Forwards and futures:
 - Differences between forwards and futures
 - Payoff profiles for both buyer and seller of forwards and futures
 - Market place of futures and forwards
 - Futures pricing models: cost-of-carry model
 - Hedging and speculation with forwards and futures
- Swaps:
 - Definition and basic mechanism of a swap contract
 - Operation and payoff of a swap during its life
 - Swap valuation: present value of expected future payoffs
 - Hedging and speculation with swaps

Course Outline

- **Options:** Chapters 1-7
 - Chapter 1: Introduction: derivative markets
Overview and role of derivative securities.
 - Chapter 2: Structure of options markets
Option exchanges, trading process, quotation, and regulations.
 - Chapter 3: Principles of option pricing
Option price boundary conditions and put-call parity relations.
 - Chapters 4 & 5: Option pricing models
Binominal tree model and the Black-Scholes option price model.
 - Chapter 6: Option strategies
Single option positions and option-stock combinations.
 - Chapter 7: Advanced option strategies
Option collar, box spreads, and more.
- **Forwards and futures:** Chapters 8-11
 - Chapter 8: Structure of forward and futures markets
Futures exchanges, trading process, quotations, and regulations.
 - Chapter 9: Principles of forward/futures pricing
Fixed income pricing, spot/forward rates, duration, and portfolio theory.
Cost-of-carry model, no-arbitrage conditions.
 - Chapter 10: Futures strategies
Long/short hedges, hedge ratios, commodity/bond/equity index hedges.
 - Chapter 11: Advanced futures strategies
Delivery options and spot-futures arbitrage.
- **Other derivative securities:** Chapter 12
 - Chapter 12: Swaps
Interest rate swaps, currency swaps, equity swaps, and credit default swaps.

References:

- **Books:**

Fundamentals of Futures and Options Markets, John Hull, 9th ed., 2016

Options, Futures, and Other Derivatives, John Hull, 10th ed., 2017

<http://www-2.rotman.utoronto.ca/~hull/>

Derivative Markets, Robert McDonald, 3rd ed., 2009

Derivatives, Fred Arditti, 1996

Derivative Securities, Robert Jarrow and Stuart Turnbull, 1999

http://www.defaultrisk.com/rs_jarrow_robert.htm

Derivative Markets, Peter Ritchken, 1996

- **Journals:**

RISK

Journal of Derivatives

Derivatives Quarterly

Journal of Futures Markets

Review of Derivatives Research

Financial Analysts Journal

- **Websites:**

<http://www.cboe.com/>

VIX: <http://www.cboe.com/micro/volatility/introduction.aspx>

<http://www.cmegroup.com/>

<http://www.bloomberg.com/>

<http://online.wsj.com/>

<http://finance.yahoo.com/>

Power point rules:

I award “power points” to students who ask good questions, or provide good answers to my questions, or is the first one who reports an error in my lecture notes. Each power point counts as 1% of the total course credit. To get them: (1) participate and be awarded power points; (2) properly submit your award request online within **24 hours** of award via <https://goo.gl/forms/DNJNrRQ9QCt4Y8pZ2>. **All power points expire after 24 hours of award. No exceptions.** You may not earn more than one power point per day. If you do not properly report your power point, it will be voided. The max number of power points in a semester is five.

Course highlights:

- An introduction to the fastest growing areas in financial derivative securities
- Understand structural differences among options, forwards, futures, and swaps
- Understand how to trade, price, and use derivative contracts
- Improve your Excel programing skills
- The course is highly correlated with CFA level 1 curriculum in derivatives.