



## Shanghai Jiao Tong University

### BU463 Risk Management and Derivatives (Postgraduate, Online)

<b>Instructor Information</b>	Zhu Jie Home Institution: Shanghai University Email: zhu_jie@t.shu.edu.cn		
<b>Term</b>	June 28, 2021 - July 16, 2021	<b>Credits</b>	4 units
<b>Course Delivery</b>	The class will be delivered in the format of online. Other than recorded lecture videos, the instructor will arrange 4 hours' real-time interactions with students per week (via discussion forum, zoom meeting, and WeChat). The workload students are expected to complete to properly pass this course is about 15 hours per week.		
<b>Required Texts (with ISBN)</b>	Options, Futures, and Other Derivatives, 10th Edition, John C. Hull, Pearson Press		
<b>Prerequisite</b>	N/A		



## Course Overview

This course covers derivatives such as options, forward contracts, futures contracts, and swaps. Students will learn to make decisions by taking into account such features as interest rates, and rates of return. They will learn about the concept of arbitrage, and when consideration of such is sufficient to price different investments. Applications to call and put options will be given.

## Learning Outcomes

1. Students will learn when arbitrage arguments are not sufficient to evaluate investment opportunities.
2. Students will learn to make use of utility theory and mathematical optimization models to determine optimal decisions.
3. Dynamic programming will be introduced and used to solve sequential optimization problems.
4. The use of simulation in financial engineering will be explored.

## Course Procedure

The subject is taught in lectures, tutorials and self-managed learning materials in print and electronic formats. The lectures provide the structure of the topic area, discussion of the theory and some practical examples. The tutorials provide an opportunity to discuss ideas, ethical issues and make practical application of these theories to financial investment and innovation. Students are expected to at least attempt to solve these questions beforehand and actively participate in tutorial discussions.

## Lecture Materials

Course Text: Options, Futures, and Other Derivatives, 10th Edition, John C. Hull, Pearson Press

Reference Book: 《Fundamentals of Futures and Options Markets》 《Introduces Quantitative Finance》



### Grading Policy

Assignment1 & 2	20%
Mid-term exam	30%
Final Exam	50%

### Grading Scale is as follows

Number grade	Letter grade	GPA
90-100	A	4.0
85-89	A-	3.7
80-84	B+	3.3
75-79	B	3.0
70-74	B-	2.7
67-69	C+	2.3
65-66	C	2.0
62-64	C-	1.7
60-61	D	1.0
≤59	F (Failure)	0



### Class Schedule

Date	Lecture	Readings	Online Teaching Arrangement
Day 1	Introduction and Mechanics of Futures Markets	Chapter 1, Chapter 2	approximately 90 minutes pre-recorded video lectures
Day 2	Hedging Strategies Using Futures	Chapter 3	approximately 90 minutes pre-recorded video lectures
Day 3	Interest Rates	Chapter 4	approximately 90 minutes pre-recorded video lectures
Day 4	Determination of Forward and Futures Prices	Chapter 5	approximately 90 minutes pre-recorded video lectures
Day 5	Interest Rate Futures	Chapter 6	approximately 90 minutes pre-recorded video lectures plus 120 minutes online interaction via Zoom
Day 6	Swaps	Chapter 7	approximately 90 minutes pre-recorded video lectures
Day 7	Securitization and the Credit Crisis of 2007	Chapter 8	approximately 90 minutes pre-recorded video lectures
Day 8	Mid-term Exam		
Day 9	Mechanics of Options Markets	Chapter 9	approximately 90 minutes pre-recorded video lectures
Day 10	Properties of Stock Options and Trading Strategies Involving Options	Chapter 10, Chapter 11	approximately 90 minutes pre-recorded video lectures plus 70 minutes online interaction via Zoom
Day 11	Binomial Trees	Chapter 12	approximately 90 minutes pre-recorded video lectures
Day 12	The Black-Scholes-Merton Model	Chapter 13	approximately 90 minutes pre-recorded video lectures
Day 13	Employee stock options	Chapter 14	approximately 90 minutes pre-recorded video lectures
Day 14	Options on Stock Indices and Currencies and Futures Options	Chapter 15, Chapter 16	approximately 90 minutes pre-recorded video lectures plus 70 minutes online interaction via Zoom
Day 15	Final Exam		