



## Shanghai Jiao Tong University

### BU463 Risk Management and Derivatives (Postgraduate)

<b>Instructor Information</b>	Jackson Jinhong Mi Home Institution: Shanghai Maritime University Email: <a href="mailto:jhmi@shmtu.edu.cn">jhmi@shmtu.edu.cn</a> Office Hours: Determined by Instructor		
<b>Term</b>	March 22, 2021 - June 11, 2021	<b>Credits</b>	4 units
<b>Class Hours</b>	Once per week, 200 mins per teaching day		
<b>Discussion Sessions</b>	2 hours each week, conducted by teaching assistant(s)		
<b>Total Contact Hours</b>	66 contact hours (1 contact hour = 45 mins, 3000 mins in total)		
<b>Required Texts (with ISBN)</b>	John C. Hull, Options, Futures, and Other Derivatives, 10th edition, Prentice Hall, 2018. ISBN-13: 978-0134472089		
<b>Prerequisite</b>	Students are expected to have a thorough knowledge of all material covered in an introductory finance course.		
The course might be moved to online delivery due to COVID-19 pandemic. Students will be notified once the decision is made.			



## Course Overview

The course will focus on the application of financial derivatives and financial engineering to the issues and problems of financial risk management. The first part of the course concentrates on introduction and pricing of derivative securities such as forwards, futures, options and swaps. The second part focuses on the application of these derivative securities for financial risk management within corporations and financial institutions. Topics will include introduction to derivatives markets, pricing futures and forwards, Binomial model for pricing options, introduction to stochastic calculus, Ito's lemma, no arbitrage pricing of options and Black Scholes model, option greeks, pricing swaps, managing market risk, credit risk and liquidity risk. The course will also cover real world case studies to illustrate practical application of financial derivatives to solve complex risk management problems.

## Learning Outcomes

1. Use knowledge of key concepts in Finance to facilitate financial decision making.
2. Think critically about financial risk management problems and provide potential solutions.
3. Develop a strong understanding of derivative instruments and their applications.
4. Communicate effectively.

## Grading Policy

Mid-semester Exam	30%
Case Study (Risk Management)	30%
Final Exam	40%

## Grading Scale is as follows

Number grade	Letter grade	GP A
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

Due to the on-going pandemic, there is a possibility that in-person courses move to online delivery. Students will be notified once the decision is made.

If the in-person courses are to be changed to online courses, we will make a few adjustments:



**Lecture:** Each lecture will be uploaded on SJTU SCE online learning platform on a daily basis. Students are required to watch them according to the course schedule.

**Discussion:** There will be 2 hours open session on ZOOM every week. The attendance of the discussion is important as it is part of your final score.

**Office hours:** 2 hour per week

**Exam:** Written Exam. If in-person courses move to online delivery, the time limit for take-home exam is 130% of the time for the normal on-campus examination. The date and time for the take-home exam for course shall be announced. The question paper will be shared with the students at the exam-time electronically, student shall answer the question well turn on his/her video via ZOOM. The students will have to submit their responses to the questions electronically by the end of exam-time.



### Class Schedule

Date	Lecture	Readings
Week 1	Forwards and Futures Contracts I	Chapters 1, 2 , 3
Week 2	Forwards and Futures Contracts II	Chapters 4 and 5
Week 3	Swaps	Chapter 7
Week 4	Securitization and the credit crisis of 2007	Chapter 8
Week 5	Mechanics of Options Markets and Properties of Stock Options	Chapter 10, 11
Week 6	Mid-semester Exam	
Week 7	<b>Trading strategies involving options</b>	Chapter 12
Week 8	Binomial trees and Wiener processes Itô's lemma	Chapter 13, 14
Week 9	The Black—Scholes—Merton model	Chapter 15
Week 10	Option Greeks Volatility Smile	Chap. 19, 20
Week 11	Group Presentation & Final exam review	Tutorial questions and supporting material
Week 12	Final Exam	