

Risk Management and Derivatives

Department: FISS

Date: 2022/4/8

Course Code	ECON170032
Course Title	Risk Management and Derivatives
Credit	3
Credit Hours	48
Course Objectives	<ul style="list-style-type: none"> - Students will gain a basic structure about quantitative finance, learn the definition and application of various derivatives, and how to apply binomial trees to price financial derivatives. - Students will learn trading strategies involving call and put options. - Students will master how to apply risk measures such as Value at Risk and Expected Shortfall in risk management framework.
Course Description	<p>This course covers forwards, futures, swaps, and options. In Part I, students will have good knowledge of how forwards, futures and swaps work, how they are used, and how they are priced. In Part II, we will introduce the mechanics of option markets, properties of stock options, options on stock indices and currencies as well as various types of exotic options. In Part III, theories about binomial trees, Wiener processes, Ito's Lemma, Black-Scholes-Merton Model will be further illustrated, and market risk measures will be covered.</p>
Course Requirements: (e.g. pre-requisites)	
Prerequisites: Foundations of Finance Statistics	
Teaching Methods:	
Online live lectures for 12 weeks, approximately 4 hours per week	
Instructor's Academic Background:	
Dr. Ning ZHANG	
University of Reading, Reading, UK	
<i>ICMA Centre, Henley Business School</i>	
Ph.D. in Finance	2016-2020
MSc in Financial Engineering	2015-2016
Sichuan University, Chengdu, China	
<i>School of Economics</i>	
BA in Finance	2011-2015

Course Schedule (Please supply the details about each lesson):

Week	Lecture	Readings
Week 1	Introduction Futures Markets and Central Counterparties	Chapter 1 Chapter 2
Week 2	Hedging Strategies Using Futures Interest Rates	Chapter 3 Chapter 4
Week 3	Determination of Forward and Futures Prices	Chapter 5
Week 4	Interest Rate Futures	Chapter 6
Week 5	Swaps	Chapter 7
Week 6	Securitization, the Credit Crisis and XVAs	Chapter 8 Chapter 9
Week 7	Mechanics of Options Markets Properties of Stock Options	Chapter 10 Chapter 11
Week 8	Options on stock indices and currencies Exotic options	Chapter 17 Chapter 26
Week 9	Trading Strategies Involving Options	Chapter 12
Week 10	Binomial Trees The Black–Scholes–Merton Model	Chapter 13 Chapter 15
Week 11	The Greek letters Volatility smiles	Chapter 19 Chapter 20
Week 12	Value at risk and expected shortfall	Chapter 22

The design of class discussion or exercise, practice, experience and so on:

Discussion: We may use WeChat, Tencent or Zoom online meetings for class discussion every week.

Practice and exams: There will be two individual projects throughout the course as below:

- Mid-term project
- Final project

Grading & Evaluation (Provide a final grade that reflects the formative evaluation process):**Assessment:**

Attendance	10%
Mid-term project	40%
Final project	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

Usage of Textbook: Yes (complete textbook information form below) No

Textbook Information (No more than two textbooks) :

Title	Author	ISBN	Publishing time	Publisher	Type I	Type II
Options, Futures and Other Derivatives	John C. Hull	9780136939979	2022	Pearson Education	<input type="checkbox"/> Self-compiled Textbook (Published) <input type="checkbox"/> Non-mainland Textbook <input type="checkbox"/> Other Textbook (Published)	<input type="checkbox"/> National Planning Textbook <input type="checkbox"/> Provincial and Ministerial Planning Textbook <input type="checkbox"/> School Level Planning Textbook <input type="checkbox"/> Others
					<input type="checkbox"/> Self-compiled Textbook (Published) <input type="checkbox"/> Non-mainland Textbook <input type="checkbox"/> Other Textbook (Published)	<input type="checkbox"/> National Planning Textbook <input type="checkbox"/> Provincial and Ministerial Planning Textbook <input type="checkbox"/> School Level Planning Textbook <input type="checkbox"/> Others

Teaching References (Including author, title, publisher, publishing time, ISBN):

Other reference books: 《Fundamentals of Futures and Options Markets》 ; 《Introduces Quantitative Finance》

Table column size can be adjusted according to the content.