Risk Management and Derivatives

Winter School @ Fudan SOE 2022

Course Code	ECON2130037		
Course Title	Risk Management and Derivatives		
Credit	3	**Credit Hours**	48 credit hours
Course Objectives	- 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	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.		

Course Requirements:

Prerequisites: Foundations of Finance
Statistics

Teaching Methods:

Online live lectures for 3 weeks, approximately 16 hours per week

Course Schedule

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

Lecture	**Topic**	**Readings**
Lecture 1	Introduction Futures Markets and Central Counterparties	Chapter 1 Chapter 2
Lecture 2	Hedging Strategies Using Futures Interest Rates	Chapter 3 Chapter 4
Lecture 3	Determination of Forward and Futures Prices	Chapter 5
Lecture 4	Interest Rate Futures	Chapter 6
Lecture 5	Swaps	Chapter 7
Lecture 6	Securitization, the Credit Crisis and XVAs	Chapter 8 Chapter 9
Lecture 7	Mechanics of Options Markets	Chapter 10

	Properties of Stock Options	Chapter 11
Lecture 8	Options on stock indices and currencies Exotic options	Chapter 17 Chapter 26
Lecture 9	Trading Strategies Involving Options	Chapter 12
Lecture 10	Binomial Trees The Black–Scholes–Merton Model	Chapter 13 Chapter 15
Lecture 11	The Greek letters Volatility smiles	Chapter 19 Chapter 20
Lecture 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:

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

Teaching Materials & References:

Title	Author	ISBN	Publishing time	Publisher	Type I	Type II
Options, Futures and Other	John C. Hull	9780136939979	2022	Pearson Education	□Self-compiled Textbook (Published) □**Non-mainland Textbook** □Other Textbook (Published)	□National Planning Textbook □Provincial and Ministerial Planning Textbook □School Level Planning Textbook □Others

Derivatives						
					□Self-compiled Textbook (Published) □Non-mainland Textbook □Other Textbook (Published)	□National Planning Textbook □Provincial and Ministerial Planning Textbook □School Level Planning Textbook □Others
Teaching References (Including author, title, publisher, publishing time, ISBN)**:** Other reference books: 《Fundamentals of Futures and Options Markets》; 《Introduces Quantitative Finance》						