

East China Normal University

FINA 31 - Financial Risk Management

Instructor: Ying Wang

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Home University: East China Normal University

Semester: June 27 to July 15, 2022

Course Hour: Monday through Friday, 160 mins per teaching day;

Total Contact Hours: 64 contact hours

Credits: 4

Designated Textbook with ISBN:

Options, Futures and Other Derivatives, John C. Hull, 10th Edition, Pearson Education.

ISBN-10: 013447208X

ISBN-13: 9780134472089

Value at Risk: The New Benchmark for Managing Financial Risk, Jorion, Philippe, 3rd Edition, 2007

Financial Enterprise Risk Management, Sweeting, Paul, 2nd Edition, 2017

Reference Book:

Fundamentals of Futures and Options Markets

Introduces Quantitative Finance

Course Prerequisite:

Foundations of Finance

Statistics

**Notes: The course might be moved to online delivery due to COVID-19 pandemic. Students will be notified once such decision is made.*

Course Overview

This course covers financial derivatives related to risk management. For instance, we will introduce the pricing rules and properties for 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. Moreover, hedging is an important risk management strategy, and so we will introduce the hedging strategies using futures and options, and mechanics of option markets, properties of stock options, options on stock indices and currencies as well as the various types of exotic options. Finally, basic theories about binomial trees, Wiener processes, Ito's Lemma, Black-Scholes-Merton Model as well as some examples of risk measures will be further illustrated.

Learning Outcomes

Upon completion of this course, students should be able to:

- Students will learn when arbitrage arguments are not sufficient to evaluate investment opportunities, and make use of utility theory and mathematical optimization models to determine optimal decisions for financial risk management.
- Students will gain a basic structure about quantitative finance, learn the definition and application of the various derivatives, and how to apply binomial trees to price financial derivatives and apply these theories for dynamic hedging.
- Students will master how to the apply risk measures such as Value at Risk and Expected Shortfall in certain risk management framework.

Grading Scale and Notes

The following definitions will be used as a guide for the assignment of grades:

Number Grade	Letter Grade	Definitions
94-100	A	Extraordinary distinction, indicating a full mastery of course content and excellent work.
90-93	A-	
87-89	B+	Strong performance demonstrating a high level of attainment, indicating a good comprehension of the course material and the student's full engagement with the course requirements and activities.
84-86	B	
80-83	B-	
77-79	C+	Acceptable performance, demonstrating an adequate and satisfactory comprehension of the course material and the student has met the basic requirements for completing assignments and participating in class activities.
70-76	C	
60-69	D	A marginal performance in the required exercises demonstrating a minimal passing level of attainment.
0-59	F	An unacceptable performance. The F grade indicates that the student's performance has revealed almost no understanding of the course content.



Assessment Policy

Assessment	Final Grade
Mid-Term Examination	40%
Final Examination	50%
Attendance	10%

Course Schedule

Date	Lecture	Reading/Assignments/ Examination
Day 1	Introduction Futures Markets and Central Counterparties	Chapter 1 Chapter 2
Day 2	Hedging Strategies Using Futures Interest Rates	Chapter 3 Chapter 4
Day 3	Determination of Forward and Futures Prices	Chapter 5
Day 4	Interest Rate Futures	Chapter 6
Day 5	Swaps	Chapter 7
Day 6	Securitization and the Credit Crisis of 2007 Review	Chapter 8
Day 7	N/A	Mid-term Exam (120 mins open)
Day 8	Mechanics of Options Markets Properties of Stock Options	Chapter 10 Chapter 11
Day 9	Options on stock indices and currencies Exotic options	Chapter 17 Chapter 26
Day 10	Trading Strategies Involving Options	Chapter 12
Day 11	Binomial Trees Wiener processes and Ito's lemma The Black-Scholes-Merton Model	Chapter 13 Chapter 14 Chapter 15
Day 12	The Greek letters Volatility smiles	Chapter 19 Chapter 20
Day 13	Value at risk and expected shortfall Martingales and measures	Chapter 22 Chapter 28
Day 14	Review	
Day 15	N/A	Final Exam (120 mins open)

Reading List:

As listed in **Course Schedule**