NATIONAL UNIVERSITY OF SINGAPORE
Department of Finance

FIN3712: Options and Futures

Semester 2, 2025/2026

Instructor:	**Assoc Prof LEE Hon Sing**
Office:	**MRB BIZ1 7-75**
Telephone:	**6516-5665**
E-mail:	**honsing@nus.edu.sg**
Consultation Hrs:	By appointment through email

Course Objective

The module provides an in-depth analysis of the theories and models that are essential to the understanding of contingent claims. The course covers topics on the mathematics of financial derivatives, stochastic models of securities price movements, Black-Scholes analysis and risk-neutral valuation, and analytical and numerical procedures for various option-embedded products. Students reading this module are expected to have some basic knowledge of options and futures.

Methodology/Pedagogy

The main coursework shall closely follow the textbook by Chance and Brooks (see below). This is a renowned textbook in the industry widely adopted in MBA programs. This is also the recommended text for the CFA level 1 exam. The coursework will be mainly assessed by a mid-term quiz and a final quiz.

Requirements for the Course

Prerequisites

FIN2704 Finance
FIN3702 Investment Analysis and Portfolio Management

Recommended Textbooks

(CB) Introduction to Derivatives and Risk Management by Don M. Chance, Roberts Brooks (2015), 10th edition, Cengage Learning, ISBN-13: 978-1305104969

Optional Reference Textbooks

(H) Options, Futures, and Other Derivatives by John C Hull (2021), 11th Edition, Pearson, ISBN-13: 978-1292410654

Financial Calculators

If you intend to take the CFA Institute exams, then I recommend getting the Texas Instruments BA II plus financial calculator (preferred) or the HP 12C financial calculator.
Reference: http://www.cfainstitute.org/cfaprog/resources/examdetails/policies/calculator.html

If you are not concerned about the CFA Institute exams, then any calculator with financial functions would do. This course allows any programmable calculators.

Assessment

The weight distribution for different components is as follows:

Mid-Term Quiz	30
Final Quiz	30
Group Project	30
Class Participation	10
Total	**100**

Mid-Term Quiz

Date: Lesson 7
The mid-term quiz will be a 2-hour closed-book test covering lessons 1 to 6. It will be held during class hours. Students are to make sure that they are available to sit for the mid-term quiz.

Final Quiz

Date: Lesson 13
The final quiz will be 2-hour closed-book and cover lessons 7 to 12. Students are to make sure that they are available to sit for the quiz.

Group Project: Introduction to Derivative Instruments

Each seminar class will have project groups of 5 students each. Each group is to submit a 1100 word review of the following compulsory readings:

1) The Relationship Between Put and Call Option Prices, Hans R. Stoll, The Journal of Finance, Dec., 1969, Vol. 24, No. 5 (Dec., 1969), pp. 801-824. Deadline: Week of Lesson 5 Friday 2359 hrs.

2) Theory of Rational Option Pricing, Robert C. Merton, The Bell Journal of Economics and Management Science, Spring, 1973, Vol. 4, No. 1 (Spring, 1973), pp. 141-183. Deadline: Week of Lesson 8 Friday 2359 hrs.

3) How Accurate Are Value-at-Risk Models at Commercial Banks? Jeremy Berkowitz and James O'Brien, The Journal of Finance, Jun., 2002, Vol. 57, No. 3 (Jun., 2002), pp. 1093-1111. Deadline: Week of Lesson 13 Friday 2359 hrs.

For each reading, state the following:

- (300 words) Summarize the paper.
- (300 words) Provide some numerical examples to illustrate one of the conclusions or try to replicate one empirical result using your own data.
- (500 words) your critique of the paper.

Class participation

Students are strongly encouraged to participate in class by sharing their views, asking questions, and answering ad-hoc questions during class. Students who are absent for a class session will not earn class participation points for that session.

Other points to note

- **Attendance**: Since this is a 100% CA course, students must not miss more than 2 classes (not including absence due to medical (accompanied by medical certificates) or compassionate reasons). Violators will be heavily penalized or may even fail the entire module.
- **CA Attendance**: Students who miss any CA component will receive zero marks for that component. Absentees due to medical (accompanied by medical certificates) or compassionate reasons may be given a substitute form of assessment.
- Students are encouraged to always give feedback to the instructor comments and suggestions that may help the class to learn better.
- Students are to check the Canvas frequently for announcements.
- Please use the forum in Canvas exclusively for students' discussions
- Please use NUS e-mail for e-mail communications

Academic Honesty & Plagiarism

Academic integrity and honesty are essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. **In case of any doubts, you should consult your instructor.**

Additional guidance is available at:
http://www.nus.edu.sg/registrar/adminpolicy/acceptance.html#NUSCodeofStudentConduct

Online Module on Plagiarism:
http://emodule.nus.edu.sg/ac/

Tentative Lesson Schedule:

Lesson	Topic and Activity	Chapters
1	Introduction Structure of Derivatives Market	1,2
2	Principles of Option Pricing	3
3	Option Pricing Models: The Binomial Model	4
4	Option Pricing Models: The Black-Scholes-Merton Model	5
5	Basic Option Strategies, Advanced Option Strategies	6, 7
6	Valuation of Structured Products through Monte Carlo Simulation	Lecture Notes
7	***Mid-Term Quiz (2 hours)***	
8	Principles of Pricing Forwards, Futures, and Options on Futures Futures Arbitrage Strategies	8, 9
9	Forward and Futures Hedging, Spread, and Target Strategies	10

10	Swaps Interest Rate Forwards and Options	11, 12
11	Advanced Derivatives and Strategies	13
12	Financial Risk Management Techniques and Applications Managing Risk in an Organization	14, 15
13	***Final Quiz (2 hours)***	