

# Course Syllabus

## Derivatives Market

Fall 2022

National Tsing Hua University  
Department of Quantitative Finance  
Undergraduate Program  
2021 Semester I – 3 Credits  
Monday: 8:00-11:00

Instructor: Wan-Chien Chiu  
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Office: R613 College of Technology  
Office Hours: Friday, 10:00-11:50

### Aims

The course provides an understanding of the uses and the valuation of the main derivative financial instruments: futures, swaps and options. It covers the trading mechanisms used on derivative markets and explains the fundamental principles underlying the pricing of derivative instruments and their use in portfolio management. Particular attention is paid to the practicalities of using derivative instruments for risk management purposes.

### Learning Objectives

1. Analyse how futures and forwards can be used by hedgers and speculators.
2. Evaluate the price and the value of forwards (futures) contracts.
3. Perform valuation of an interest rate swap and a currency swap.
4. Discuss how option payoffs are determined.
5. Discuss the use of a variety of option trading strategies and apply the put-call parity theorem.
6. Derive and evaluate the fair value of an option contract using the binomial option pricing model and the Black–Scholes–Merton option pricing model.

### Required Textbook

[1] Hull, John. *Options, Futures and Other Derivatives*. Pearson (9<sup>th</sup> Global Edition)  
(雙葉書局代理)

## Teaching Methods

Teaching staff will distribute teaching materials to the website: <https://lms.nthu.edu.tw/>

This course will be proceeding by course lectures once a week in class hours. The lecture notes are mostly based on the textbook. The relevant chapters are indicated in the course schedule. The course schedule could be adjusted according to your learning achievement. It is strongly recommended to check the site regularly for class announcements and learning materials.

## Evaluation

Group Assignment	20%
In-Lecture Quizzes	24%
Midterm Exam	26%
Final Exam	30%

- **In-Lecture Quizzes** – There will be **six** in-lecture quizzes. Each time counts equally (i.e., 4% of the overall course grade). The basic grade is 60 (i.e., even if students leave the script empty, students still get 60). Each quiz contains two questions and lasts for 15 minutes.
- **Exams** – The exams will be in form of closed book.