COURSE CONTENT

Course Coordinator	Leong Kaiwen
Course Code	HE3016
Course Title	Principles of Mathematics Finance
Pre-requisites	HE1003 Basic Mathematics for Economists & HE1004 Introduction to Statistical Theory & Methods /HE1005 Introduction to Probability & Statistical Inference /MH2500 Probability & Introduction To Statistics /MH3500 Statistics
	HE1004 Introduction to Statistical Theory & Methods /HE1005 Introduction to Probability & Statistical Inference /MH2500 Probability & Introduction To Statistics /MH3500 Statistics (Applicable to MAEC, 2nd Major & Double Degree)
No of AUs	3
Contact Hours	39 hours (2 hrs Lecture + 1 hr Tutorial per week)

Course Aims

Principles of Mathematics Finance is a subject that applies mathematical concepts and methods to evaluate financial derivatives and implement hedging strategies. It introduces the landscape of the derivatives market and key operational features in this special market.

Intended Learning Outcomes (ILO)

By the end of this course, you (as a student) would be able to:

1. Apply standard tools of mathematical analysis to price standard financial instruments
2. Decipher the jargon of many standard financial documents such as the wall street journal
3. Describe how economists determine the correct prices of options and optimal investing strategies as define by the Nobels in economics.

Course Content

1. Understanding how the derivatives market functions
2. Introducing the derivative products
3. Learning how to pricing and hedging strategy on derivative products
4. Studying how to use the quantitative methods and models to understand and managing risks in the derivatives market

Assessment (includes both continuous and summative assessment)

Continuous Assessment	:	100%
Total	:	**100%**

Reading and References

(1) J. C. Hull, "Options, futures and other derivatives", Prentice Hall (1997)

(2) W. Sharpe, "Portfolio theory and capital markets", McGraw-Hill (2000).

(3) All lecture notes, homework and homework solutions will be provided to students.

Course Instructors

Instructor	Office Location	Email
Leong Kaiwen	SHHK 04-52	kleong@ntu.edu.sg

Planned Weekly Schedule

Week	Topic	Course LO	Readings/ Activities
1	Financial Derivatives and Derivatives Market (Trading & Speculations)	1	Lecture notes, homework and homework solutions will be provided by the instructor
2	Mechanics of future markets	1	Lecture notes, homework and homework solutions will be provided by the instructor
3	Hedging strategies using futures	1,2	Lecture notes, homework and homework solutions will be provided by the instructor
4	Interest rate of derivatives	1,2	Lecture notes, homework and homework solutions will be provided by the instructor
5	Determination of forward and future price	1,2	Lecture notes, homework and homework solutions will be provided by the instructor
6	Interest rate futures	1,2,3	Lecture notes, homework and homework solutions will be provided by the instructor
7	Swaps	1,2,3	Lecture notes, homework and homework solutions will be provided by the instructor
Recess Week			
8	Revision	1,2,3	Lecture notes, homework and homework solutions will be provided by the instructor
9	Mechanics of options markets	1,2,3	Lecture notes, homework and homework solutions will be provided by the instructor
10	Stock Options	1,2,3	Lecture notes, homework and homework solutions will be provided by the instructor

11	Binomial trees	1,2,3	Lecture notes, homework and homework solutions will be provided by the instructor
12	The Black-scholes-Merton model	1,2,3	Lecture notes, homework and homework solutions will be provided by the instructor
13	Revision	1,2,3	Lecture notes, homework and homework solutions will be provided by the instructor