

# EF4321: DERIVATIVES AND RISK MANAGEMENT

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## Effective Term

Semester A 2022/23

## Part I Course Overview

### Course Title

Derivatives and Risk Management

### Subject Code

EF - Economics and Finance

### Course Number

4321

### Academic Unit

Economics and Finance (EF)

### College/School

College of Business (CB)

### Course Duration

One Semester

### Credit Units

3

### Level

B1, B2, B3, B4 - Bachelor's Degree

### Medium of Instruction

English

### Medium of Assessment

English

### Prerequisites

CB3410 Financial Management or FB3410 Financial Management AND EF3320 Security Analysis and Portfolio Management

### Precursors

EF3333 Financial Systems, Markets and Instruments

### Equivalent Courses

Nil

### Exclusive Courses

EF4420 Derivatives Analysis and Advanced Investment Strategies

## Part II Course Details

### Abstract

This course aims to facilitate students' learning of financial derivative instruments, and the practice of risk management. Upon completion of this course, students will be able to apply a variety of derivatives models; use options, futures contracts, and swaps to do arbitrage and to form hedging portfolios; and use derivative securities to manage the risk of financial assets. The first part of the course concentrates on the practice of risk management. It will address various types of risks that firms are exposed to, how to estimate the risk exposure of firms, and the costs and benefits associated with risk management. Students are required to apply the risk management methodology to real market data and compare various measures of risks. The second part of the course will focus on financial derivative instruments, including a discussion of the nature of various derivative instruments, how they can be used for investment and hedging purposes, and how they are priced. Students are encouraged to develop their discovery and innovative ability by creating various hedging solutions.

### Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Identify the basic knowledge of derivative securities and risk management; compare and contrast the different characteristics and purposes of use for various derivatives; explain the risk exposures of companies in various industries.	60	x	x	
2	Apply options, futures, forwards, swaps, and etc. to do arbitrage and to form hedging portfolios; discover the arbitrage opportunities by analyzing historical and recent data and test the effectiveness of hedging portfolio in different kinds of scenarios.	20	x	x	x
3	Use derivatives to manage the risk of financial assets; develop innovative skills by structuring solutions to manage the risk exposure of financial assets of the company.	10		x	x
4	Identify the VAR in risk management; compare the VAR in various portfolios and interpret the difference creatively and critically.	10	x	x	x

#### A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

#### A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

#### A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

**Teaching and Learning Activities (TLAs)**

	<b>TLAs</b>	<b>Brief Description</b>	<b>CILO No.</b>	<b>Hours/week (if applicable)</b>
1	Lectures	To provide basic concepts and structure. The lecturer encourages students to think critically and logically, to solve the problems by themselves rather than giving away the solutions without engaging students.	1, 2, 3, 4	3 hrs/wk
2	Assignments	The assignments consist of short questions and calculation questions, with a focus on the prevailing risk management strategies adopted by companies. Students are expected to apply the risk-management theories and to critically analyse the related issues in the financial market.	1, 2, 3, 4	1 hr/wk
3	Mid-Term Exam	The Mid-Term examination which covers the topics in lectures and coursework will reflect the learning outcomes of students as well as their accomplishments of discovery and innovation.	1, 2	
4	Final Exam	The final examination which covers the topics in lectures and coursework will reflect the learning outcomes of students as well as their accomplishments of discovery and innovation.	1, 2, 3, 4	

**Assessment Tasks / Activities (ATs)**

	<b>ATs</b>	<b>CILO No.</b>	<b>Weighting (%)</b>	<b>Remarks (e.g. Parameter for GenAI use)</b>
1	Assignments	1, 2, 3, 4	20	
2	Mid-term Exam	1, 2	30	

**Continuous Assessment (%)**

50

**Examination (%)**

50

**Examination Duration (Hours)**

2

**Assessment Rubrics (AR)**

**Assessment Task**

Final Exam (2 hour exam)

**Criterion**

Capacity for:

- (i) understanding different kinds of derivatives;
- (ii) using different derivatives and assets to form hedging portfolios;
- (iii) managing different risk with different derivatives; (iv) discovering arbitrage opportunities; and etc.

**Excellent (A+, A, A-)**

High

**Good (B+, B, B-)**

Significant

**Fair (C+, C, C-)**

Moderate

**Marginal (D)**

Basis

**Failure (F)**

Not even reaching marginal levels

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**Assessment Task**

Assignments

**Criterion**

Ability to explain different instrument, methodology, procedure, and etc.

**Excellent (A+, A, A-)**

High

**Good (B+, B, B-)**

Significant

**Fair (C+, C, C-)**

Moderate

**Marginal (D)**

Basis

**Failure (F)**

Not even reaching marginal levels

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**Assessment Task**

Mid-term Exam

**Criterion**

Capacity for:

- (i) understanding different kinds of derivatives;
- (ii) using different derivatives and assets to form hedging portfolios;
- (iii) managing different risk with different derivatives;
- (iv) discovering arbitrage opportunities; and etc.

**Excellent (A+, A, A-)**

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**Marginal (D)**

Basis

**Failure (F)**

Not even reaching marginal levels

**Part III Other Information****Keyword Syllabus**

Introduction: Derivative Instruments and Risk Management

Derivative Instruments and Fundamentals of Hedging

1. Forward and Futures
2. Determination of Forward and Futures Prices
3. Hedging with Forward and Futures
4. Swaps
5. Mechanics of Options Markets
6. Properties of Stock Options
7. Trading Strategies and Risks with Options
8. Binomial Trees for Pricing Options
9. Option Prices, Delta and the Black-and-Scholes Model
10. Hedging in Practice: Case Studies
11. Using the Greeks, Delta Hedging and Portfolio Insurance

Topics in Risk Management

1. Fundamentals of Risk Management
2. Market Risk and the Value-at-Risk Framework
3. Credit Risk and Credit Risk Management
4. Derivatives Mishaps and What We Can Learn from Them

**Reading List****Compulsory Readings**

	Title
1	Options, Futures, and Other Derivatives, Eighth Edition, by HULL, John C. Published by Prentice Hall, 2006, 847 pages.
2	Lecture Notes, available on the Canvas

**Additional Readings**

	Title
1	Books for fun: A Random Walk Down Wall Street by Burton Malkiel; When Genius Failed. The Rise and Fall of Long-Term Capital Management by Roger Lowenstein; Big Bets Gone Bad by Philippe Jorion.
2	Recommended periodicals and newspapers: Economist, Wall Street Journal, and Business Week. (Most of the web editions are free, though online-registration might be needed)
3	Recommended web sites: Yahoo! Finance, Bloomberg, CNN Money, Smart Money, MSNBC Stocks & Economy, and USA Today Money Sections.