

EF4821: DERIVATIVES PRICING II: INTEREST RATE AND CREDIT RISK

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Derivatives Pricing II: Interest Rate and Credit Risk

Subject Code

EF - Economics and Finance

Course Number

4821

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

EF4820 Derivatives Pricing I: Stock and FX

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course aims to further study the theoretical and numerical methods in pricing fixed income securities and interest rate derivatives. It covers important term structure (short-rate) and LIBOR market models, and credit risk models. This course aims to enable students to efficiently implement a wide range of models for pricing and hedging fixed income derivatives, and to equip students with the capability of performing integrated numerical computations in pricing and hedging derivatives that are important in practice.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if DEC-A1 DEC-A2 DEC-A3 app.)			
1	Describe the key ideas and models that are important to the fixed income securities and associated financial derivatives		x	x	x
2	Identify the key elements of quantitative methods in pricing and hedging fixed income securities and derivatives			x	x
3	Apply the basic quantitative methods to price and hedge complex structured financial products			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)

TLAs		Brief Description	CILO No.	Hours/week (if applicable)
1	1	Lectures	1, 2, 3	
2	2	Project	1, 2, 3	

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignments	1, 2, 3	30	
2	Projects	1, 2, 3	20	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Assessment Rubrics (AR)**Assessment Task**

Coursework and Examination

Excellent (A+, A, A-)

Demonstrate a superior grasp of the techniques, and capable of delivering stable, efficient, and correct solution

Good (B+, B, B-)

Demonstrate a good grasp of the techniques, and capable of delivering workable and correct solution

Fair (C+, C, C-)

Demonstrate adequate grasp of the techniques, and capable of delivering workable solution with some minor errors

Marginal (D)

Demonstrate limited grasp of the techniques, and capable of delivering some key components of the solution only

Failure (F)

Demonstrate very little grasp of the techniques, and incapable of delivering any key component of the solution

Part III Other Information**Keyword Syllabus**

1. Fixed Income Securities and Options,
2. Interest Rate Derivatives and Libor Market Models
3. Term Structure Models (Vasicek, CIR, Multi-Factor Affine Models)
4. Credit Derivatives

Reading List**Compulsory Readings**

Title	
1	Kerry Back, A Course in Derivative Securities: Introduction to Theory and Computation, Springer (ISBN 978-3-540-27900-6)
2	John C. Hull, Options, Futures, and Other Derivatives, Prentice Hall (ISBN 0-13-046592-5)

Additional Readings

Title	
1	P. Wilmott, Paul Wilmott Introduces Quantitative Finance, Wiley
2	Darrel Duffie and Kenneth Singleton, Credit Risk, Princeton