EF4821: DERIVATIVES PRICING II: INTEREST RATE AND CREDIT RISK

Effective Term
Semester A 2024/25

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 app.)	DEC-A1	DEC-A2	DEC-A3
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.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Students will engage in lecture and to think critically and logically by responding to questions and solving the problems.	1, 2, 3	
2	Peer Discussion	Students will engage in structured discussion with peers to identify areas to improve on in their returned assessment tasks.	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

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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