

**City University of Hong Kong  
Course Syllabus**

**offered by Department of Economics and Finance  
with effect from Semester A 2024/25**

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**Part I Course Overview**

**Course Title:** Fixed Income Securities

**Course Code:** EF5157

**Course Duration:** 1 semester

**Credit Units:** 3

**Level:** P5

**Medium of Instruction:** English

**Medium of Assessment:** English

**Prerequisites:**  
*(Course Code and Title)* Nil

**Precursors:**  
*(Course Code and Title)* EF5042 Corporate Finance and EF5052 Investments

**Equivalent Courses:**  
*(Course Code and Title)* EF5154 Advanced Topics in Debt Markets

**Exclusive Courses:**  
*(Course Code and Title)* Nil

## Part II Course Details

### 1. Abstract

This course aims at introducing the analytical techniques, products, applications, and institutions in debt markets to students.

### 2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Demonstrate a solid understanding of the basics of fixed income securities and the main theories of the term structure of interest rates.	15%	√	√	
2.	Explain and apply the concepts of duration and convexity in the context of interest rate risk management.	15%	√	√	
3.	Explain interest rate derivatives (forwards, futures, swaps, options) and apply them for hedging purposes.	15%	√	√	√
4.	Explain and construct binomial trees and apply them for pricing interest rate derivatives (caps, floors, futures, European and American swaptions, callable bonds).	30%	√	√	√
5.	Explain Monte Carlo simulation on binomial trees and apply it to price path-dependent options and residential mortgage-backed securities.	15%	√	√	√
6.	Describe and apply the Black formula for pricing caps, floors, and swaptions.	10%	√	√	√
		100%			

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.

### 3. Learning and Teaching Activities (LTAs)

(LTAs designed to facilitate students' achievement of the CILOs.)

LTA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4	5	6	
Lectures, in-class discussions	Students will engage in formal lectures that are designed to develop their discovery abilities through class discussions and circumstance simulation. Lectures will focus on basic concepts and frameworks. Students are expected to discover the methodology of interest rate models and applications. In-class discussions will motivate students' participation and enhance their communication skills, critical thinking, and creative and innovative skills.	√	√	√	√	√	√	3 hours lecture per week

### 4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.						Weighting	Remarks
	1	2	3	4	5	6		
Continuous Assessment: <u>50</u> %								
Group assignments/projects	√	√	√	√	√	√	50%	
Examination: <u>50</u> % (duration: 2 hours)								
							100%	

## 5. Assessment Rubrics

*(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)*

Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Coursework (group assignments/projects)	Demonstrate the capability of applying financial theories of fixed income securities and interest rate derivatives learned in the course by completing the various assigned group assignments and projects.	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Final Examination	Demonstrate good understanding of the financial theories and applications of fixed income securities and interest rate derivatives.	High	Significant	Moderate	Basic	Not even reaching marginal levels

Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
1. Coursework (group assignments/projects)	Demonstrate the capability of applying financial theories of fixed income securities and interest rate derivatives learned in the course by completing the various assigned group assignments and projects..	High	Significant	Basic	Not even reaching marginal levels
2. Final Examination	Demonstrate good understanding of the financial theories and applications of fixed income securities and interest rate derivatives.	High	Significant	Basic	Not even reaching marginal levels

### **Part III Other Information** (more details can be provided separately in the teaching plan)

#### **1. Keyword Syllabus**

*(An indication of the key topics of the course.)*

Fixed income securities, Bond markets, Yield-to-maturity, Bond duration and convexity, Spot rates, Forward rates, Term-structure of interest rates, Mortgage-backed securities, Prepayment risk, Convertible bonds, Binomial-tree method, Credit derivatives, Structured products

#### **2. Reading List**

##### **2.1 Compulsory Readings**

*(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)*

1. *Fixed Income Securities: Valuation, Risk and Risk Management* by Pietro Veronesi. John Wiley & Sons, 2011. ISBN 978-0-470-10910-6 (paper) or 978-0-470-58689-1 (e-book).

##### **2.2 Additional Readings**

*(Additional references for students to learn to expand their knowledge about the subject.)*