City University of Hong Kong
Course Syllabus

offered by College of Business
with effect from Semester A 2024 / 25

Part I Course Overview

Course Title:	Applied Financial Analytics for Risk Management
Course Code:	FB5772B
Course Duration:	One 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)*	Nil
Equivalent Courses: *(Course Code and Title)*	Nil
Exclusive Courses: *(Course Code and Title)*	FB5772A

Part II Course Details

1. Abstract

The recent development of FinTech trends in the global market has formed a new fundamental revolution in the financial environments. The investment bank model and rating agency's' methodology were challenged and revised during the financial crisis and the traditional financial engineering technique was changed dramatically by the FinTech implementations. This course will introduce students to the general financial products in the market, e.g. credit ratings, fixed incomes, derivatives, structured finance including financial and real-estate assets and FinTech applications. A brief introduction of AI applications will be made during the course to let our students understand the impacts of new technology in the financial market.

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.	Describe the insights regarding the general financial products in the market	40%	√	√	√
2.	Explain various stochastic models and credit migration models for financial assets	30%	√	√	√
3.	Discuss and debate the recent global trends in various financial markets	30%	√	√	√
		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 self-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				
Lectures	Students will engage in the lectures to think critically and logically by interactively discussing the main issues. Real-world examples are discussed in the lectures to help students understand the current trend in the financial market	√	√	√				

In-class discussions	Students will participate the in-class discussions and get a better understanding of the essential materials by interpreting what they learn from the lecture	√	√	√				
Coursework, Quiz and Final Examination	Students will participate in the final exam, coursework and quiz to test their ability to understand, discover and innovate. Students will have to demonstrate to be able to master not only the details of the quantitative frameworks discussed in the course but also the big picture of what they learn.	√	√	√				

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					
Continuous Assessment: 80%								
In-class Learning Activities	√	√	√				20%	
Coursework	√	√	√				50%	
Quiz	√	√	√				10%	
Examination: 20% (duration: 3 hours,, if applicable)								
							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)
In-class Learning Activities	Attendance and punctuality; performance in class activities	Proactively participate in class discussion by offering innovative ideas and asking questions related to the subject of financial analytics for risk management.	Proactively participate in class discussion by offering some innovative ideas and asking questions related to the subject of financial analytics for risk management.	Occasionally active when urged to participate in class discussion by offering some acceptable ideas and asking limited questions related to the subject of financial analytics for risk management.	Not too active in class discussion and asking no questions related to the subject of financial analytics for risk management.	No participate in class discussion and asking no questions related to the subject of financial analytics for risk management.
Coursework	Performance in applying the knowledge and concepts covered from the course	Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.	Student who is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material.	Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited, or irrelevant use of literature.	No evidence of familiarity with the subject matter; very weak in critical and analytic skills; limited, or irrelevant use of literature.
Quiz	Students perform in the quiz and demonstrate the ability to understanding the subject matter	Excellent understanding and arguments in a logical order in the subject matter.	Good understanding and arguments in a logical order in the subject matter	Basic understanding and arguments in the subject matter.	Limited understanding and arguments in the subject matter.	Weak understanding and arguments in the subject matter.
Examination	Students perform in the written exam and demonstrate the capacity of applying the knowledge of financial analytics for risk management	Very strong capacity in applying the knowledge with a superior grasp of the credit issues of financial analytics for risk management.	Strong capacity in applying the knowledge with good grasp of the credit issues of financial analytics for risk management.	Good capacity in applying the knowledge and basic awareness of the credit issues of financial analytics for risk management.	Limited capacity in applying the knowledge and awareness of the critical issues of financial analytics for risk management.	No capacity in applying the knowledge and awareness of the critical issues of financial analytics for risk management.

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)
In-class Learning Activities	Attendance and punctuality; Performance in class activities	Proactively participate in class discussion by offering innovative ideas and asking questions related to the subject of financial analytics for risk management.	Proactively participate in class discussion by offering some innovative ideas and asking questions related to the subject of financial analytics for risk management.	Occasionally active when urged to participate in class discussion by offering some acceptable ideas and asking limited questions related to the subject of financial analytics for risk management.	Hardly participate in class discussion and asking no questions related to the subject of financial analytics for risk management.
Coursework	Performance in applying the knowledge and concepts covered from the course	Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.	Student who is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material.	Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited, or irrelevant use of literature.
Quiz	Students perform in the quiz and demonstrate the ability to understanding the subject matter	Excellent understanding and arguments in a logical order in the subject matter.	Good understanding and arguments in a logical order in the subject matter	Basic understanding and arguments in the subject matter.	Weak understanding and arguments in the subject matter.
Examination	Students perform in the written exam and demonstrate the capacity of applying the knowledge of financial analytics for risk management	Very strong capacity in applying the knowledge with a superior grasp of the credit issues of financial analytics for risk management.	Strong capacity in applying the knowledge with good grasp of the credit issues of financial analytics for risk management.	Good capacity in applying the knowledge and basic awareness of the credit issues of financial analytics for risk management.	No capacity in applying the knowledge and awareness of the critical issues of financial analytics for risk management.

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.)

Market and Credit Risk

- the principle of financial market
- the reasons and impacts of 2008 financial crisis
- the most recent development of financial products and FinTech applications
- the definition of a credit event, yield to maturity, and yield curve
- the effects of interest rate affecting the credit related products and their corresponding measures, such as duration and convexity
- rating agency's rating theory
- stochastic simulation of derivative prices and risk managements
- how to apply risk management skills into the practical product designs
- the structure of securitizing various collateralized obligations, such as real-estate, CDO, and account receivables

Operational Risk

- the nature of operational risk
- KYC, AML and Compliance risk
- Market normality and attitude for financial business

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.)

NIL

2.2 Additional Readings

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

1.	John C. Hull (2021). Options, Futures & Other Derivatives. 11th Ed., Prentice Hall.
2.	Harry H. Panjer (2006). Operations Risk: Modeling Analytics. Wiley Inter-science.