1. General Information

Course Subject	FINA
Course Number	4341
Course Title	Quantitative Risk Management
Academic Years	2023-2024
Grading Method	Letter

2. Instructors

Dr Qiu,Huiyan
Office: Room 917 /F K.K. Leung Building
Email: hqiu@hku.hk
Office: 28591046
Subclasses: 2A

4. Course Description

Course Description	This course introduces concepts, techniques and framework for quantitative risk management at financial institutions. Financial firms, with their complicated list of positions in a mixture of instruments, are exposed to various sources of financial risk. This class focuses mainly on market risk, the risk of unexpected changes in prices and rates. The first part of the course introduces basic concepts in risk management and builds the toolkit for measuring risk quantitatively. The second part of the course is devoted to studying the widely accepted Value at Risk (VaR) systems, including calculations, back testing and flaws of VaR. The course also touches on other aspects of financial risk such as liquidity risk, credit risk and operational risk.
Prerequisites	FINA3350: Mathematical Finance
Mutually exclusive	STAT4608: Market risk analysis
Free Elective	Yes

5. Course Objectives

1. To learn the general concept of risk and risk management and to understand the goal and benefit of risk management.

2. To learn the quantitative tools for measuring risk.

3. To understand the framework of Value-at-Risk and its limitation and flaws.

4. To understand the basics of credit risk, liquidity risk and operational risk.

6. Faculty Learning Goals

Goal 1: Acquisition and internalization of knowledge of the programme discipline

6. Faculty Learning Goals

Goal 2: Application and integration of knowledge
Goal 3: Inculcating professionalism
Goal 4: Developing global outlook
Goal 5: Mastering communication skills
Goal 6: Cultivating leadership

7. Course Learning Outcomes

Course Teaching and Learning Activities	Aligned Faculty Learning Goals					
	1	2	3	4	5	6
CLO1. Learn the general concept of risk and risk management. Understand different sources of risk faced by financial institutions, how they manage risk internally and the related regulation requirement.		✔	✔	✔	✔	✔
CLO2. Acquire quantitative tools for measuring risk and know how to apply these techniques for hedging.	✔	✔				
CLO3. Understand the framework of Value-at-Risk. Use both analytic and simulation approaches to estimate VaR for single derivatives and complicated portfolios. Understand the pros and cons of different VaR estimation methods. Know how to do back testing for VaR using historical data. Understand the limitation and flaws of VaR.	✔	✔				
CLO4. Understand the basics of credit risk, liquidity risk and operational risk.			✔	✔	✔	

8. Course Teaching and Learning Activities

Course Teaching and Learning Activities #	Expected Study Hours	Study Load (% of study)
T&L1. Lectures	36	30
T&L2. Assignments and project	36	30
T&L3. Self-study	48	40
	Total: 120	Total: 100

9. Assessment Methods

Assessment Methods	Description	Weight %	Aligned Course Learning Outcomes
A1. Attendance and Participation	Class attendance and active participation in discussion are expected for all students.	5%	1,2,3,4
A2. Individual Assignments	There are three individual homework assignments which are designed to help students review basic concepts and to practice applying the concepts.	20%	1,2,3,4
A3. Group Project	Students will work on a project in a group with 2 or 3 students. They are expected to apply what they learn in class to the real financial activities. Each group will	20%	1,2,3,4

9. Assessment Methods

	do oral presentation and submit final report at the end of the semester. Students will be asked to do peer review at the end to reduce free-riding problem. Go to the course Moodle page for details.		
A4. Mid-term Examination	There will be a mid-term exam to test students' breadth and depth of the understanding of the major concepts covered and students' ability to integrate and apply this knowledge. No make-up midterm examination will be given. Students missing the midterm exam will receive 0 unless they obtain approval from instructor with convincing reasons and evidence prior to the exam. Approved students who have missed the midterm will have 90% of their final exam score as the midterm exam score.	20%	1,2,3,4
A5. Final Exam	There will be a comprehensive final exam to test students' breadth and depth of the understanding of the major concepts covered in the course and students' ability to integrate and apply this knowledge.	35%	1,2,3,4

Assessment Rubrics

A1. Attendance and Participation	
A+,A,A-	Extremely well prepared for class discussion, very active in sharing views and attended almost all lectures and tutorials.
B+,B,B-	Partially prepared for class discussion, quite active in sharing views and attended most of the lectures and tutorials.
C+,C,C-	Not well prepared for class discussion, limited active in sharing views and attended many of the lectures and tutorials.
D+,D	Not well prepared for class discussion, no sharing of views and attended some of the lectures and tutorials.
F	Poorly prepared for class discussion and no sharing of views and experience and rarely attended lectures and tutorials.
A2. Individual Assignments	
A+,A,A-	Submitted all homework with excellent accuracy.
B+,B,B-	Submitted well written homework with good accuracy.
C+,C,C-	Submitted homework with fair level accuracy.
D+,D	Submitted homework with limited accuracy.
F	Poorly written homework or no submission.
A3. Group Project	
A+,A,A-	Demonstrated a clear understanding of and the ability to apply the theory, concepts and issues relating to the topic. Clearly identified the most critical aspects of the task and adopted a critical perspective. Developed excellent argument and offered a logically consistent and well-articulated analysis and insight into the subject. Drew widely from the academic literature and elsewhere whilst maintaining relevance. All aspects conformed to

	a high academic / professional standard.
B+,B,B-	Demonstrated a good understanding and some application of the theory and issues relating to the topic. Identified critical aspects of the task and adopted a critical perspective. Showed some evidence of analysis, supported by logical argument and insight into the subject. Drew on relevant academic and other material. Most aspects conformed to a high academic / professional standard.
C+,C,C-	Demonstrated a good understanding of the theory, concepts and issues relating to the topic but limited application relating to the topic. Some presented argument showed some insight but not always consistent and logical. Drew upon an adequate range of academic and other material. Most aspects conformed to an acceptable academic / professional standard.
D+,D	Demonstrated mainly description, showing basic understanding of the topic but no application. Showed little evidence of analysis but no clear and logical argument relating to the subject. Drew primarily upon course materials. Limited aspects conformed to academic / professional standards.
F	Demonstrated limited understanding of the topic and drew conclusions unrelated to the topic. The written work was not of an academic / professional standard.
A4. Mid-term Examination	Midterm exam may include three types of questions: multiple choice, calculation problems, and essay questions. Multiple choice and calculation problems are graded according to the marks assigned to each question. Essay questions are graded according to the following criteria:
A+,A,A-	Idea development is insightful and sophisticated; Supporting evidence is convincing, accurate and detailed. Well written with clear focus.
B+,B,B-	Idea development is clear and thoughtful; Supporting evidence is sufficient and accurate. Well written.
C+,C,C-	Idea development is simplistic and lacking in relevance; Supporting evidence insufficient but accurate. Somewhat well written.
D+,D	Idea development is superficial and ineffective; Supporting evidence is insufficient and inaccurate. Writing is unclear.
F	Idea development is absent; Supporting evidence is vague or missing. Poorly written.
A5. Final Exam	Final exam may include three types of questions: multiple choice, calculation problems, and essay questions. Multiple choice and calculation problems are graded according to the marks assigned to each question. Essay questions are graded according to the following criteria:
A+,A,A-	Idea development is insightful and sophisticated; Supporting evidence is convincing, accurate and detailed. Well written with clear focus.
B+,B,B-	Idea development is clear and thoughtful; Supporting evidence is sufficient and accurate. Well written.
C+,C,C-	Idea development is simplistic and lacking in relevance; Supporting evidence insufficient but accurate. Somewhat well written.
D+,D	Idea development is superficial and ineffective; Supporting evidence is insufficient and inaccurate. Writing is unclear.
F	Idea development is absent; Supporting evidence is vague or missing. Poorly written.

10. Course Grade Descriptors

A+,A,A-	Exhibited high level of understanding of the course materials through excellent performance in class discussion, assignments, group project and exams.

10. Course Grade Descriptors

B+,B,B-	Exhibited reasonably high level of understanding of the course materials through good performance in class discussion, assignments, group project and exams.
C+,C,C-	Exhibited fair level of understanding of the course materials.
D+,D	Exhibited limited level of understanding of the course materials.
F	Exhibited low level of understanding of the course materials.

11. Course Content and Tentative Teaching Schedule

Topic/ Session	Date	Time	Content	Readings	Assignments	Other information
			Introduction to Quantitative Risk Management			
			Banks; Managing Risk Exposures			
			Interest Rate Risk			
			Value at Risk and Expected Shortfall			
			Volatility			
			Market Risk VaR: Model Based Approach			
			Market Risk VaR: Historical Simulation Approach			
			Regulations			

12. Required/Recommended Readings & Online Materials

Reading	**Useful references:** 1. Philippe Jorion. Value at Risk, the new benchmark for managing financial risk. McGraw Hill. 2. Michael B. Miller. Quantitative Financial Risk Management. Wiley Finance 3. John C. Hull. Options, Futures, and other derivatives. Pearson
Textbook	John. C. Hull. Risk Management and Financial Institutions. Wiley Finance

13. Means / Processes for Student feedback on Course

✔	Conducting mid-term survey in additional to SETL around the end of the semester
✔	Online response via Moodle site

13. Means / Processes for Student feedback on Course

Others

14. Course Policy

Class Conduct
Students are required to attend all classes on time. If you miss a class, it is entirely your responsibility for what you have missed. In case you have to leave the class early, please inform the instructor beforehand and leave quietly.

No use of mobile phone or chatting is allowed when the class is in session. Remember to turn off or mute the phone before each session. The instructor has the discretion to give penalty in case of class misconduct.

Respect your instructors and your fellow students. Be considerate to others.

Academic Dishonesty
The University Regulations on academic dishonesty will be strictly enforced! Please check the University Statement on plagiarism on the web: http://www.hku.hk/plagiarism/
Academic dishonesty is any act that misrepresents a person's own academic work or that compromises the academic work of another. It includes (but not limited to) cheating on assignments or examinations; plagiarizing, i.e., representing someone else's ideas as if they are one's own; sabotaging another's work.
If you are caught in an act of academic dishonesty or misconduct, you will receive an "F" grade for the subject. The relevant Board of Examiners may impose other penalty in relation to the seriousness of the offense.

15. Additional Course Information

● Announcements, assignments, and lecture slides will be posted on the course MOODLE website. Hard copy of lecture notes will not be provided.
● No late assignment submission will be accepted.