FIN3714 FINANCIAL RISK MANAGEMENT
TERM 1 AY 2023/2024

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OBJECTIVE

This course will help you learn the primary principles, practices and models in financial risk management. We will cover the most important quantitative risk models commonly used for estimating the risk of financial assets in various settings. This course is meant to be a practical, hands-on course where you will become familiar with several state-of-the-art quantitative risk models as well as their implementation in the real world – **this is the stuff you need to know if you want a job in this field, or will ever review a risk report given to you**! The course uses several Excel exercises to illustrate the models as well as their implementation. You will be required to implement these models live in class using Excel. In addition to quantitative risk models, we will also cover important risk strategies that are useful in managing interest rate, foreign currency and credit risks. Several real-life examples will be discussed in class, with a particular emphasis on learning from recent risk disasters.

This course will be useful for students seeking professional positions in any part of the financial industry, including in fixed income and derivatives sales, trading, asset management, hedge funds, banking, credit, risk management and FinTech.

BOOKS AND READINGS

There is no required textbook for this course. Lecture notes and readings will be posted ahead of class. Two useful textbooks in this area are:

1. Elements of Financial Risk Management (Second Edition), Peter Christoffersen: http://www.sciencedirect.com/science/book/9780123744487
2. Risk Management and Financial Institutions, 6th edition, John Hull, Wiley Finance

The assigned readings are an important part of the learning process, so please make sure you complete those before each class. We will also go over several real-life examples in this course, especially those involving recent risk disasters. In addition, Excel will be used extensively in this course, so please be prepared with a laptop with Excel in class.

ASSESSMENTS

Component	Weight	Individual/Group
Class participation	10%	Individual
In class quizzes	20%	Individual
Spreadsheet submission at the end of the course	20%	Individual
Term Project	20%	Group
In-class test (closed book)	30%	Individual
Total	**100%**	

There will be several quizzes throughout the course. In addition, you will be required to submit your completed spreadsheet at the end of the course. Details about these will be shared in class.

PREREQUISITES

FIN3102/3702. QF3101 can substitute FIN3702 if the BBA office allows. *This course requires a good understanding of introductory probability and statistics*.

CLASS PARTICIPATION

You are required to attend all classes. I strongly encourage everyone to actively participate in class discussions. If something is not clear or you have a question, please stop me right there and ask, do not wait. Please ask me questions, lots of questions – I welcome and encourage vigorous discussion in class as well as outside. In Finance we are always trying to forecast the future, which is inherently an impossible task. Hence there must be abundant caution with anything we do. ***Like a painting from any top artist, the big picture is important, but so are the details***.

CONTACT AND COMMUNICATION

I encourage you to communicate with me by e-mail so I can respond to you with a written note. You can always make an appointment to see me in my office. Please feel free to reach out in a timely manner for any questions or concerns, and let me know how I can help you learn more from this course!

TERM PROJECT

Each student will work on a term project throughout the semester, which will be an evaluation of a recent financial disaster. You must form groups of 4 or 5 students for this project (not less than 4, not more than 5 per group). At the end of the semester, each group will be required to make a short presentation in class and submit a brief written report. Presentation and report guidelines will be distributed at the start of the semester. More details about the project will be discussed in class at the start of the course.

ACADEMIC INTEGRITY REQUIREMENT

All students in this course must adhere to university standards of academic integrity at all times, which is essential for the pursuit and acquisition of knowledge. Cheating, plagiarism, and other forms of academic dishonesty will not be tolerated in this course, *at all*. This includes, but is not limited to, consulting with another person during an exam, turning in work that was prepared by someone other than you (including from any AI engine or a web source), and making minor modifications to the work of someone else and turning it in as your own. Everything you submit must be your work and your work alone – if you include any content that is not entirely produced by you, you must include citations to that source. Ignorance will not be permitted as an excuse. If you are not sure whether something you plan to submit would be considered either cheating or plagiarism, it is your responsibility to ask for clarification.

Artificial Intelligence (AI) tools such as ChatGPT do not require specialist knowledge to use. Many of these AI tools are commonly used in social media, for example, to create content and disguise and refine content created from programmes like ChatGPT. I understand that students may be drawn to using these AI Tools, as they would for any other electronic aid.

However, to be clear, normal academic rules still apply. As noted in the Code of Student Conduct:
"*The University takes a strict view of cheating in any form, deceptive fabrication, plagiarism and violation of intellectual property and copyright laws. Any student who is found to have engaged in such misconduct is subject to disciplinary action by the University*."

The use of any and all AI tools is not allowed in this course. If you do end up using ChatGPT or any other AI tool in your work, you must provide a proper citation and representation of how you used the tool and what prompts you used to generate output. Failure to cite its use constitutes academic misconduct.

Additional guidance can be found at:
Admission Condition: http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct
NUS Code of Student Conduct: http://nus.edu.sg/osa/resources/code-of-student-conduct
Academic Integrity Essentials: https://libguides.nus.edu.sg/new2nus/acadintegrity#s-lib-ctab-22144949-4
Guidelines on the Use of AI Tools For Academic
Work: https://libguides.nus.edu.sg/new2nus/acadintegrity#s-lib-ctab-22144949-3

DETAILED SCHEDULE OF CLASS SESSIONS (*tentative, subject to change*)

Week	Date	Topics Covered
1	Aug 15	Introduction to risk management; Risk terminology; Why should risk be managed? How can risk management create value? A review of simple derivatives and their role in managing risk
2	Aug 22	Risk measurement; Why should risk be measured? Liquidity versus insolvency; Banking regulation including Basel Accords; Introduction to Value-at-Risk (VaR) as a risk measure
3	Aug 29	Portfolio VaR calculations; Risk mapping; Marginal, Incremental and Component VaRs; VaR example using a risk disaster; Expected shortfall
4	Sep 05	Stylized facts about equity returns and their use in risk modeling; Analytic methods for estimating VaR; Using the normal distribution assumption; Pros and cons of analytic methods
5	Sep 12	Historical simulation VaR; Estimation using equity data; Pros and cons of historical simulation
6	Sep 19	Modeling Volatility; The RiskMetrics model; Intuition behind GARCH variance prediction models
	Sep 26	Recess Week
7	Oct 03	Estimating the GARCH variance model; Extension to nonlinear GARCH models; pros and cons of various volatility prediction models and their use in the real world
8	Oct 10	Monte Carlo Simulation and its use in estimating VaR; Combining volatility prediction models with MCS implementation
9	Oct 17	Back testing and stress testing of risk models; The use of VaR models for capital estimation; Cash Flow at Risk (CFaR) estimation for companies
10	Oct 24	Common risk strategies for managing interest rate, foreign currency, commodity and credit risk; Corporate examples
11	Oct 31	Analysis of several recent risk debacles; Common failings, what should we learn from them?
12	Nov 07	**In-class test (closed book);** Course review and wrap-up
13	Nov 14	**Term Project Presentations and Discussion**