

## RMBI 3110 - Introduction to Risk Management and Business Intelligence (2020-21 Spring Term)

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### General Information

- Lecture: Mon 13:30 – 14:50        Fri 09:00 – 10:20  
Lab:        Tue 18:00 – 18:50
- Instructor: Dr. Baoqian PAN, Kris <[ismtpbq@ust.hk](mailto:ismtpbq@ust.hk)>        Rm: LSK 5041
- TA: Anson TONG <[imchtong@ust.hk](mailto:imchtong@ust.hk)> Rm: LSK 4049C

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### Course Objectives and Outcomes

**Objectives:** This course presents concepts and techniques for risk management and business intelligence from entry level to intermediate level. We will apply regression, Bayesian regression, and time series models to predict and evaluate risks in market activity. Clustering technique will be discussed and applied in detecting market anomaly.

**Outcomes:** After completing this course, you are expected to know, how to use quantitative risk tools and business intelligence technique to help you make smart decision in financial markets.

### Course Materials

1. Textbook " Risk Management and Financial Institutions", John C. Hull.
2. You need to complete three assignments with a little python. Entry-level knowledge will be enough for you to follow the instruction. You are recommended to install Anaconda and work with Jupyter notebook. For the final exam, the knowledge of python is NOT necessary.
3. A course website (<http://canvas.ust.hk>) is maintained which contains lectures notes, assignments, and links of data.

### Evaluation

Your overall grade will be based on the following:

1. 3 Assignments (40%) [2 group HWs of 3 students in a group and 1 individual HW]
2. Final (50%)

**If the final exam is missed, you won't pass the course. No make-up final exam will be provided.**

3. Class participation (10%) [Including 6% attendance + 4% for two course surveys]

**How to get full mark of 6% attendance?**

6% = fully attend more than 80% of the lectures (to accommodate the flexibility of class participation for the current situation).

**Note: if you do not turn on the video on ZOOM, you will not get the participation mark for that class.**

## **Syllabus**

This syllabus is subject to change in the event of extenuating circumstances.

### **Part I. Financial Market**

- Financial Market and Traders
- Risk and Return
- Introduction to Regression Models
- From Mean/Variance Tradeoff to CAPM

### **Part II. Market Risk**

- Introduction to Risk Hedging and Option Pricing
- Greeks and Hedging Strategy
- Value at Risk and Expected Shortfall
- Introduction to Basel I, II, III and Business Intelligence

### **Part III. Modeling of Market Risk**

- Introduction to Bayesian Statistics
- Financial Application of Bayesian Method
- Extreme Value Theory and Risk Modeling
- Introduction to Time Series
- Volatility and GARCH Model
- Cointegration
- Detection of Regime Switching

## **GRIEVANCE PROCEDURE**

If you disagree with grades that have been assigned to your work, you have the possibility to meet instructors within one week after the grades have been published on the course website. Be specific about what it is that you don't agree with.

## **ACADEMIC INTEGRITY**

Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of other groups, or tampering with the academic work of other groups. All exam answers must be your own, and you must not provide any assistance to other students during exams.