HKU BUSINESS SCHOOL
港大經管學院

Inspire·Empower·Lead

1. General Information

Course Subject	FINA
Course Number	4359
Course Title	Data Analytics, Quantitative Finance, and Blockchain Finance
Academic Years	2025-2026
Grading Method	Letter

2. Instructors

Professor YOU,Yang
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4. Course Description

Course Description	This course provides students a foundation of how various datasets and tools applied in quantitative finance and blockchain finance. The first part of the course focuses on understanding and building back-testing system – a common tool for quant-traders to test their trading ideas with historical data. In the second part, we present research papers on return predictability and practice on real-world financial datasets, students will learn methods used to design their own trading strategies. We also provide various live data feeds for students to apply their knowledge to financial markets. The third part covers blockchain finance including topics on asset issuance on blockchain, decentralized derivative market creation, blockchain data analytics. We will also invite guest speakers to the classroom from the local financial industry.
Prerequisites	ECON1210: Introductory Microeconomics; and FINA2320: Investments and Portfolio Analysis; and IIMT2602: Business Programming; or COMP1117 Computer programming; or ENGG1111 Computer programming and applications

5. Course Objectives

1. Develop programming skills suitable for quantitative research
2. Gain proficiency in performing basic data cleaning, data manipulation, and experience with quant trading.
3. Gain a working understanding of different analytical methods used in finance and how to test whether trading strategies can beat the market or not

5. Course Objectives

4. Gain knowledge in how to create new financial markets with blockchain and how to understand records on blockchain

6. Faculty Learning Goals

Goal 1: Acquisition and internalization of knowledge of the programme discipline
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. Students will learn to analyze data and create research ideas.	✔	✔				
CLO2. Students will gain an overview of analytical tools used in finance and their typical application, and demonstrate understanding of how to implement trading strategies through programming assignments	✔					
CLO3. Students will demonstrate strong fluency in one analytical method of their own choice through course projects.			✔	✔		✔
CLO4. Students will be encouraged to creatively apply methods or data to solve specific industry problems and implement simulated trading.				✔		
CLO5. Students will be encouraged to communicate ideas.			✔			✔

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. Course final project	48	40
T&L3. Self-learning	36	30
	Total: 120	Total: 100

9. Assessment Methods

Assessment Methods	Description	Weight %	Aligned Course Learning Outcomes
A1. Problem Sets		35%	1,2,3,4
A2. Final Project		40%	1,2,3,4

9. Assessment Methods			
A3. General engagement and participation		25%	5

10. Course Grade Descriptors	
A+,A,A-	The student would can competitively apply analytical methods used in the course independently.
B+,B,B-	The student appears to be able to apply analytical methods, but requires guidance
C+,C,C-	The student has a conceptual understanding of methods applied in the course, but could not be expected to apply all methods used in the course.
D+,D	The student has shown effort, but a limited understanding of course content.
F	The student has not demonstrated effort to understand course content.

11. Course Content and Tentative Teaching Schedule		
Topic/ Session	Content	Assignments
1	Working with data 1: Overview of data analytics in finance	
2	Working with data 2: Blockchain data and blockchain finance	
3	Basic analytical tools in finance 1: Regression methods and Factor Models	
4	Basic analytical tools in finance 2: Back-testing System	i. Assignment related to trading strategy ii. Assignment related to blockchain
5	Financial data 1: Datasets used in finance and Research 1	
6	Financial data 2: Datasets used in finance and Research 2	
7	Financial data 3:Alternative Data Sources and analysis 1	
8	Financial data 4:Alternative Data Sources and analysis 2	
9	Blockchain finance 1: NFT data and analytics	
10	Blockchain finance 2: Decentralized Finance and DEX Data	
11	Blockchain finance 3: Decentralized Finance and Financial Market Creation	
12	Blockchain finance 4: Decentralized Finance and Return Predictability	
13	Basic machine learning - regression trees, cluster analysis	Course project involving heavy use of one prior method to solve a problem that is standard in finance. I will provide project goals. Students will see the project list from the first week of

11. Course Content and Tentative Teaching Schedule		
		class.

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
	Others

14. Course Policy

Group work encouraged. Students will describe their contributions to each with a signature. Attendance is encouraged and will factor into partial evaluation. No testing, and therefore no plagiarism.

For assignments, the main driver of assessment will be accuracy with respect to the answers on which the assignments are based. An “A” quality course assignment looks professional and any discrepancies can be explained carefully. A “B” course assignment is mostly correct, but gaps in understanding remain. A “C” course assignment shows obvious gaps in understanding.

For the final course project, assessment will be based on quality of execution and originality of the investment idea. An A course project will demonstrate thorough understanding of course methods, careful consideration of pitfalls to analysis, and some element of originality. The work will be well communicated and easy to understand.

15. Additional Course Information

This course adapts MFIN 7035 – Big Data in Finance – to the undergraduate level with some small part splicing in teaching on Quantitative Trading, as allowed.