



DEPARTMENT OF FINANCE
THE CHINESE UNIVERSITY OF HONG KONG

FINA 3010 D & E: Financial Markets 金融市場

2023-24 Term 2 / Spring 2024

1. Time and Location

Session D: Wednesday 9:30 AM – 12:15 PM, Cheng Yu Tung Building 209B
Session E: Wednesday 2:30 PM – 5:15 PM, Cheng Yu Tung Building 209B

2. Instructor and TA

Instructor: Prof. Chanik Jo (趙讚翼)
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TA: Ms. Fan Zhang (张繁), Finance Ph.D. Student
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3. Course Description

What is this course about?

FINA 3010 provides advanced theoretical/empirical tools for students ready to tackle cutting-edge concepts in financial markets. Through a combination of advanced theoretical and empirical tools, students will gain a deep understanding and knowledge of the fascinating and dynamic world of finance. This course covers various topics, including bonds, stocks, options, mutual funds, hedge funds, ETFs, green finance, and market efficiency. Each topic is explored in detail, focusing on the most sophisticated and up-to-date techniques for analyzing financial markets. Be prepared to be challenged and work hard like never before! For a more in-depth look at the course content, please see Section 5

Learning outcome/strategies to achieve the goals:

This course will push you to develop advanced critical thinking skills, enabling you to independently analyze seemingly complex financial data and make sound investment decisions. You'll learn to apply sophisticated economic and financial theories to real-world scenarios, with a heavy emphasis on an in-depth statistical analysis of real financial data. Be ready to roll up your sleeves and get hands-on experience working with real financial data, as you tackle somewhat demanding assignments and projects throughout the course.

Prerequisites: “Financial Management (FINA2010)” or “Fundamentals of Business Finance (FINA2310)” are prerequisites. If you have not taken one of these courses, permission from the instructor is required. Basic statistical tools (mean, standard deviation, covariance, correlation, sample/population moments, regressions) and mathematical tools (calculus concepts and numerical optimizations) covered in a decent high school will be used for portfolio/utility maximizations. TA will do tutorials for regressions and optimization tools.

This course materials overlap with “Investment Analysis and Portfolio Management (FINA 3080)” to some extent although this course has some advanced topics that are not generally covered in FINA 3080. If you already took FINA 3080 and want to learn something *substantially* different from FINA 3080, you are advised not to take this course.

Course components: The course consists of 100% lectures. However, this course pursues interactive learning activities.

4. Grading

Grades will be based on the student’s performance on one midterm, one final exam, two assignments, and participation. Your overall score in the course will be determined as the weighted average of the five component scores. The weights on each component of the overall course grade are as follows:

Midterm	Feb. 21, 6:00 – 8:00 pm, LSK LT7	30%
Final Exam	Apr. 17, 6:00 – 8:00 pm, LSK LT7	45%
Assignment 1	by February 18, 11 pm	10%
Assignment 2	by April 14, 11 pm	10%
Participation		5%

Exams

Midterm covers Sessions 1 to 5. Final covers Sessions 7 to 11.

Exam time (6 – 8 pm) is decided to give students more time to prepare for the exam. However, if you have another exam at the same time (6 – 8 pm), you can ask an instructor who notifies his/her exam schedule later. If my exam schedule is announced later than the other instructor, I will arrange an exam during the regular teaching time as below.

Session D: Wednesday	9:30 AM – 12:15 PM,	Cheng Yu Tung Building 209B
Session E: Wednesday	2:30 PM – 5:15 PM,	Cheng Yu Tung Building 209B

Having multiple exams on the same day **cannot** be the reason for a make-up exam, as my exams are scheduled on a regular teaching day. Sample exams that are very similar to real exams will be provided. You will have enough materials to prepare for exams. The exam is a semi-closed book exam: You cannot refer to any materials during exams. However, you are allowed to bring in a calculator and an A4-size

double-sided "crib" sheet on which you may write down or digitally type whatever you wish.

Calculators are allowed during exams. Programmable calculators must be cleared before each test, and there is no sharing of calculators during the test. You can solve questions without a financial calculator, but for the final exam, you need a calculator that can compute the logarithm and exponential functions.

What is a valid pre-approved reason for missing a test?

Make-up exams are generally not possible. If you are sick on the midterm day, you have two choices (1) make-up exam and (2) transfer your midterm weight to the final. For both cases, you are required to present medical proof. If you are sick on the final exam day, a make-up exam will be arranged with medical proof. Make-up exam questions are different from regular exam questions.

Assignments

There will be two *individual* assignments. The purpose of assignments is to prepare for exams as well as learn statistical tools to handle real financial data. Assignments have questions that require analytical problem-solving and financial data exercises you must use Excel or any software to run a regression. There will be detailed instructions on the data exercise part during the class.

Assignment # 1 (Due is February 18, 11 pm) is to (1) analytically understand the bond market, and the stock market, practice risk management tools; and (2) empirically analyze the term structure of interest rates, credit spreads, and the systematic dynamics of financial markets, using regressions.

Assignment # 2 (Due is April 14, 11 pm) is to (1) analytically understand the portfolio optimizing, equity pricing, and option pricing models; and (2) empirically analyze the asset pricing risk measures, run cross-sectional regressions based on measured risk and returns, compute the BSM model-implied volatilities, based on numerical optimizations, and analyze the stylized patterns of implied volatilities, and finally study the dynamics of the S&P 500 implied volatility.

Please submit your report file in Word or PDF together with a supplementary Excel file that contains your data analysis results to the Blackboard no later than 11 pm on the due date. Late submissions will be regarded as no submission. If you do not include your data analysis results in Excel and only provide 'correct' answers to the data analysis part in your report, your marks for the data analysis will be zero.

Course Participation

- **Weight:** Course participation contributes 5% to the final grade.
- **Attendance:** Attendance does not count toward participation.
- **Active Participation:** Engaging by asking questions and answering the instructor's questions counts as participation.
- **Name Identification:** Since the instructor may not know every student by name, whenever you participate, you can approach me at the end of a course to provide your name if you believe you actively participated.

- **Relative Scoring:** Participation is reflected on a relative basis. The most active student among the two sections receives the full 5% mark, while others receive points relative to their participation compared to the most active student.

5. Course core concepts

	TOPIC	Contents
1	Introduction of Financial Markets, Bond Market 1	<ul style="list-style-type: none"> • Overview of the entire course • Why is studying finance important? • Why do financial markets exist? • Financial Instruments (Debt vs Equity Securities) • Classification of Financial Markets • Time value of money
2	Bond Market 2	<ul style="list-style-type: none"> • Bond valuation • Yield to maturity • What determines yield? • The term structure of interest rates • Forward interest rate contracts • Interest rate risk • Duration of bonds (Macaulay and Modified duration) and how to derive them and how to use them.
3	Stock Market 1	<ul style="list-style-type: none"> • Discounted Cash Flow Valuation • Estimating the dividend growth rate • The Net Present Value of Growth Opportunities • Conditional expectation measure using dividend yield • Stock valuation using multiples • Duration of stocks, how to derive, and how to use. • Tutorials for assignment 1
4	Stock Market 2	<ul style="list-style-type: none"> • What is a risk? • Risk and return relationship • Measuring Unconditional risk and return • Measuring conditional risk using the GARCH model • Why does it matter? Value-at-Risk
5	Mutual/Hedge Funds and ETFs	<ul style="list-style-type: none"> • Basic concepts of mutual funds/hedge funds, ETFs, and REITs • Mutual fund performances, size, and investors' biases • Active VS Passive investment • Leveraged ETFs, their usefulness, and investment strategies • Various types of ETFs • New Trend: Actively managed ETFs
6	Midterm	Feb. 21, 6 - 8pm, LSK LT7
7	Asset Allocation	<ul style="list-style-type: none"> • Modern portfolio theory • Consideration of multiple asset classes • Estimation of efficient frontiers using the data • How to allocate your wealth in reality? • Portfolio optimization using multiple asset classes
8	Multi-factor models/investing	<ul style="list-style-type: none"> • What is CAPM? • What determines beta? • Derivation of the CAPM using supply = demand

		<ul style="list-style-type: none"> • Applications of the CAPM • Multi-factor models • Multi-factor investing • Empirical evidence against and in favor of models.
9	Options Market	<ul style="list-style-type: none"> • Basic concepts of options and how to use options for speculation or hedging • Personal experiences of option investment and riskiness • Option combinations and strategies • Black-Scholes-Merton (BSM) model • Merton's Credit risk model • Applications of the BSM model: Implied-volatility • Volatility Smiles & Smirks • Tutorials for assignment 2
10	Market Efficiency	<ul style="list-style-type: none"> • Basic concepts of market efficiencies • Three types of market efficiencies • Cross-market arbitrage • Behavioral biases of investors • Market Bubbles • Common misconceptions • Market anomalies: Challenge to efficiency • YOLO trading: riding with the herd and implication to efficiency
11	Green Finance market	<ul style="list-style-type: none"> • What is climate risk? • Socially responsible investing • Risk-return relationship for green securities • Mispricing in green finance markets • How to hedge climate risk? • Green bonds and covenants • Things that nobody taught you but you should know
12	Review class	<ul style="list-style-type: none"> • Review the final exam materials
13	Final Exam	Apr. 17, 6 - 8pm, LSK LT7

6. Course Schedule

		TOPIC
1	10-Jan	Introduction of Financial Markets, Bond Market 1
2	17-Jan	Bond Market 2
3	24-Jan	Stock Market 1
4	31-Jan	Stock Market 2
5	7-Feb	Mutual/Hedge Funds and ETFs, Review class
6	21-Feb	Midterm, 6 - 8 pm, location: LSK LT7
7	28-Feb	Asset Allocation
8	13-March	Multi-factor models/investing
9	20-Mar	Option Market
10	27-Mar	Market Efficiency
11	3-Apr	Green Finance
12	10-Apr	Review class
13	17-Apr	Final Exam, 6 - 8 pm, location: LSK LT7

7. Course Materials

There is no required textbook for the course. All optional readings will be provided on the course website: <http://blackboard.cuhk.edu.hk/>

FYI, the following textbook partially covers the topics in our course:

Essentials of Investments, 12th Edition by Zevi Bodie, Alex Kane and Alan Marcus

8. General and Miscellaneous Policies

- Attendance is not required, but do not ask questions about materials that I cover during my lectures, while not attending lectures.
- I post frequently asked questions for each topic. Please read the FAQs before asking me a question.
- The use of a laptop is permitted but turn off your audio.
- Academic dishonesty will not be tolerated. Your responsibilities with regard to scholastic dishonesty are described in detail in Section 10. Academic honesty. In particular, it is expected that the work on your examinations will be entirely your own. Failure to do so may result in failure on the examination or course.
- Examinations will not be returned. To appeal grading on the final exam, a written explanation with details (which can be sent by email) is required. Any appeal should be sent within two weeks after the grade becomes available to you.

9. Grade Descriptors

A	Outstanding performance on all learning outcomes.
A-	Generally outstanding performance on all (or almost all) learning outcomes.
B	Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.
C	Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.
D	Barely satisfactory performance on a number of learning outcomes.
F	Unsatisfactory performance on a number of learning outcomes, OR failure to meet specified assessment requirements.

10. Academic honesty

The Chinese University of Hong Kong places very high importance on honesty in academic work submitted by students and adopts a policy of *zero tolerance* for cheating and plagiarism. Any related offense will lead to disciplinary action including termination of studies at the University. Attention is drawn to University policy and regulations on honesty in academic work, and the disciplinary guidelines and

procedures applicable to breaches of such policies and regulations. Details may be found at <http://www.cuhk.edu.hk/policy/academichonesty/>.

With each assignment, students will be required to submit a signed declaration that they are aware of these policies, regulations, guidelines, and procedures.

Assignments without the properly signed declaration will not be graded by teachers.

11. Accessibility Needs

The Chinese University of Hong Kong is committed to accessibility. If you require accommodations for a disability or have any accessibility concerns about the course, the classroom, or course materials, please contact me as soon as possible.