Capital University of Economics and Business

Overseas Chinese College

Course Syllabus

Year and Semester	Spring (Sophomore)
Course Name	Quantitative Methods
Course Code	CFA202
Course Type	General Education (Required) / General Education (Elective) / Basic Disciplinary Course / Professional Course (Required) / √ Professional Course (Elective) / Professional Course (Expanded)
Course Credits	2
Course Hours	32
Prerequisites	MAT111,MAT112,MAT221
Instructor	Lemon Li
Contact Information	occ_limeng@cueb.edu.cn
Office Hour	M T W TH 11:30-12:15;W 13:30-15:05
Learning Centre	M 18:00-20:00
Grade/Section	2019CFA
Course Time/Place	F 8:00-9:35

Textbook

Kaplan SCHWESER CFA notes

Reference Book

• *Statistics and Econometrics: Methods and Applications*, by Ashenfelter, Levine, and Zimmerman, Wiley, 2003. [ALZ]. This book provides a good and concise coverage of the key concepts used in this course.

• *Introductory Econometrics: A Modern Approach*, by Jeffrey Wooldridge, South-Western, Third Edition, 2005. [W]. This textbook will be used mainly for regression analysis, and may be a useful book to have for API-210

The textbook and reference book mainly cover the knowledge that instructor introduced in the

class, but not limited to these books, students should have the ability to search and expose to the resources to support study.

Course Description

The goal of this course is to prepare students to analyze financial issues using statistics. It covers topics in the areas of probability theory, sampling, estimation, hypothesis testing, and regression analysis. While many students taking this class will have already taken courses in statistics and regression analysis, this course will probably place a much stronger emphasis than typical courses on conceptually understanding the quantitative methods. Since the course is targeted to third-year students, we will not shy away from using the mathematical tools needed to develop the conceptual understanding. But the emphasis of the course will be on the conceptual understanding and application of the tools rather than on the math or the mechanics behind the tools. So for example, when studying hypothesis testing, we will place a heavier emphasis on what the test is doing, when to use it and how to interpret its results, than on mechanical repetitions of the calculations involved in conducting the test.

Student Learning Outcomes

After learning this course, students will be able to:

Knowledge：

- explain the general principles and theories of quantitative methods
- describe the thinking method and the methodology of quantitative method properly
- identify features of quantitative methods

Capability：

- apply the quantitative tools to analyze economic situations
- apply the quantitative methods to make effective decisions in finance
- analyze the real life situations using the tool of quantitative methods
- demonstrate effective professional skills

Mindset:

Establish the integrity and objectivity in workplace

Be ethical,logical,methodical,consistent and accurate

Apply critical thinking in the process of decision making

Teaching Methods

This course contains lectures, class discussions, homework, quizzes, presentation and exams. Textbook content will be introduced first. Then real case and practice questions will be delivered to students as a way to test their understanding of the knowledge. This will require individual or group assignment in class.

Grade Criterion

Component	Weight	Description
Final Exam	20%	A cumulative final examination will be given based on all of the contents of the class. The exam paper may be composed of multiple-choice questions, short answer questions, essay questions and practice problems. Students should rely primarily on homework assignments to give them a sense of what they may see for material on exams.
Mid-Term Test	20%	A cumulative midterm test will be given based on all of the contents that have been taught in class. The test paper may be mainly composed of multiple-choice questions and it should be completed within 60 minutes in class.
Homework	15%	Most of the assigned homework is taken from the Exercises in the textbook. Assignments will be collected at the clearly stated date. Late assignments will not be accepted. The graded assignments will be kept by the tutor for reference and won't be returned to students.
Quizzes	15%	There will be at least 2 quizzes during the semester. Quizzes may or may not be announced in advance. It may also be used as a way to check the attendance. Quizzes will test your knowledge of both concepts and the application of those concepts.
Presentation	10%	The students will be divided into several groups to prepare a presentation. Each student is required to be involved in the presentation. The topics can be selected from the textbook or lectures. Each group need to finish a PPT related to the topic which is given and hand in the related resources to the teacher before the presentation.
Participation	10%	Individuals will be asked to participate individually in a question and answer at least 5 times during the semester. The performances should be counted in their participation.
Attendance	10%	Refer to attendance policy listed below

Total	100%	

Detailed Grade Computation

	Before Midterm	After Midterm
Attendance	5%	5%
Participation	5%	5%
Homework	5%	10%
Quizzes	5%	10%
Presentation		10%
Midterm test	20% (5% of critical thinking)	
Final exam		20% (5% of critical thinking)
Total	40%	60%

Grading Policy

A+ 97-100	A 93-96	A- 90–92	B+ 87-89	B 83-86	B- 80–82
C+ 75-79	C 70-74	C- 67–69	D+ 63–66	D 62-60	F 0- 59

Exam Schedule

Midterm Test: TBA

Final Exam: TBA

Assessment of Student Performance

☞ ***Self-Study and Reading ability Practice***

Instructor will give out the chapters or the reference books to read and use class hours to have discussion; students should be able to show a proactive attitude and ability for self-study and reading. Knowledge and oral English will be elements of homework or presentation score.

☞ ***Homework***

Students should finish their homework by themselves. Copying from others will be treated as cheating and the homework scores will be lowered. Students should hand in all assignments on time. Late assignments will be accepted at the discretion of the instructor (i.e., when the student was ill or had an excused absence). Late assignments without reasonable proof will be reduced in score by 50%.

☞ ***Attendance***

Because the course covers a great deal of material, attending every class session is very important for performing well.

- Being late for 15 minutes or more is considered an absence.
- Five hours or above of unexcused absences will result in the lower level of the final grade by one grade band (e.g. from C – to D +). Any excused absence must be discussed directly with the teacher.
- Absence which is more than 1/3 of the total teaching hours will cause an F (a failing grade) directly.

  but students are welcome to continue attending classes.
- An incomplete grade (I) will be considered in case of medical or family emergencies.

☞ ***Participation***

- Students should participate in classes actively. Half of participation grade is determined by their presentation in class. They are encouraged to ask questions relevant to the subject and express their own opinions. Every student should respect the ideas, opinions, and questions of their classmates.
- Students should also use office hours to ask questions or talk with the instructor for good communication and effective learning.
- Frequent visiting the instructor and chatting in English during office hours is highly recommended.
- Any misbehavior and non-class related activities in class will result in the lower level of the participation grade, including ringing cell phones.
- All above behaviors will be solely evaluated by the instructor for scoring.

☞ ***Textbook***

Students must bring the textbook to class.

Topical Course Outline

Week	Topics	思政元素
1	● Syllabus ● Orientation Introduction: course overview	

2	● interpret interest rates as required rates of return, discount rates, or opportunity costs; ● explain an interest rate as the sum of a real risk-free rate, expected inflation, and premiums that compensate investors for distinct types of risk; Homework: practice test	结合思政元素讲述金钱的时间价值，讲述一寸光阴，一寸金的理念，启发学生珍惜时光
3	● calculate and interpret the effective annual rate, given the stated annual interest rate and the frequency of compounding; ● solve time value of money problems for different frequencies of compounding e. calculate and interpret the future value (FV) and present value (PV) of a single sum of money, an ordinary annuity, an annuity due, a perpetuity (PV only), and a series of unequal cash flows; ● demonstrate the use of a time line in modeling and solving time value of money problems. Homework: practice test	
4	● calculate and interpret the net present value (NPV) and the internal rate of return (IRR) of an investment; ● contrast the NPV rule to the IRR rule, and identify problems associated with the IRR rule; ● calculate and interpret a holding period return (total return);	
5	● calculate, interpret, and distinguish between the money-weighted and time-weighted rates of return of a portfolio, and evaluate the performance of portfolios based on these measures; ● calculate and interpret the bank discount yield, holding period yield, effective annual yield, and money market yield for a U.S. Treasury bill; ● convert among holding period yields, money market yields, effective annual yields, and bond equivalent yields	Due to qingming festival Schedule may be adjusted

6	● calculate and interpret relative frequencies and cumulative relative frequencies, given a frequency distribution; ● calculate and interpret measures of central tendency, including the population mean, sample mean, arithmetic mean, weighted average or mean (including a portfolio return viewed as a weighted mean), geometric mean, harmonic mean, median, and mode; ● calculate and interpret quartiles, quintiles, deciles, and percentiles;	讲述理性思考的思政逻辑
7	● Midterm Examination	
8	● calculate and interpret 1) a range and a mean absolute deviation and 2) the variance and standard deviation of a population and of a sample; and calculate and interpret the proportion of observations falling within a specified number of standard deviations of the mean using Chebyshev's inequality; ● calculate and interpret the coefficient of variation and the Sharpe ratio; ● explain measures of sample skewness and kurtosis and explain the use of arithmetic and geometric means when analyzing investment returns. ● define a random variable, an outcome, an event, mutually exclusive events, and exhaustive events; distinguish between unconditional and conditional probabilities; the multiplication, addition, and total probability rules; ● calculate and interpret 1) the joint probability of two events, 2) the probability that at least one of two events will occur, given the probability of each and the joint probability of the two events, and 3) a joint probability of any number of independent events; and calculate and interpret an unconditional probability using the total probability rule;	
9	● calculate and interpret covariance and correlation; conditional expectation in investment applications a tree diagram to represent an investment problem ● identify the most appropriate method to solve a particular counting problem and solve counting problems	
10	● construct a binomial tree to describe stock price movement; b. explain the key properties of the	结合数据以及案例分析人生的风

	normal distribution; ● define shortfall risk, calculate the safety-first ratio, and select an optimal portfolio using Roy's safety-first criterion; ● define shortfall risk, calculate the safety-first ratio, and select an optimal portfolio using Roy's safety-first criterion;	险以及风险控制 Due to Duanwu festival Schedule may be adjusted
11	● define simple random sampling and a sampling distribution; ● distinguish between time-series and cross-sectional data; ● explain the central limit theorem and its importance; ● identify and describe desirable properties of an estimator	
12	● define a hypothesis, describe the steps of hypothesis testing, describe and interpret the choice of the null and alternative hypotheses, and distinguish between one-tailed and two-tailed tests of hypotheses; ● explain a test statistic, Type I and Type II errors, a significance level, and how significance levels are used in hypothesis testing; ● explain a decision rule, the power of a test, and the relation between confidence intervals and hypothesis tests; ● distinguish between a statistical result and an economically meaningful result;	结合实际案例，讨论数据辅助决策的问题，强化理性思维与不可规避的问题
13	● More on hypothesis test and parametric tests	
14	● explain and interpret the p-value as it relates to hypothesis testing; e.identify the appropriate test statistic and interpret the results for a hypothesis test concerning 1) the variance of a normally distributed population, and 2) the equality of the variances of two normally distributed populations based on two independent random samples; ● identify and interpret common chart patterns; c.explain the use of cycles by technical analysts;	
15	● Final Examination	

Note: *Some chapters or sections may leave for self-study, this is the students' duty to learn and understand, they may also be included in the*

quizzes or exams. A review in Chinese may be held during L.C. and O.H. in the semester.

Teacher's Office Hour

- The instructor's office hour is shown in the front of the office door.
- Students are suggested to use the instructor's office hour and learning center to ask questions or talk with the instructor once at least per week for good communication and effective learning, which is recorded in the students' participation.
- The time can be scheduled by instructors or students, or both.

Cheating and Plagiarism

Cheating is not tolerated. Any student caught cheating on a quiz; test or exam will be given a mark of zero (0) for the particular work. At the beginning of the semester the definition of plagiarism will be carefully explained, when any thoughts or writings of another person are used, they must be clearly identified (usually one uses quotation marks) and the source notes. **If any student is caught cheating on any homework assignment, the highest score the student can earn in that course is a "C".**

***Note**: This syllabus is tentative and may be changed or modified throughout the semester. Allstudents will be notified and a new syllabus will be given.*

Instructor: Li Meng **Department Head: Lijingning**