Capital University of Economics and Business
Overseas Chinese College
Course Syllabus

FIM316 Syllabus

Semester and Year	**2018 Spring (March 5,2018-Jun 22,2018)**
Course Name	**Quantitative Method**
Course ID	**FIM316**
Section	**Y01**
Course Credits	**3**
Instructor	**Prof.M.Li**
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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 objectives

The ultimate objective is that by the end of this course you will be able to:
(i) Conceptually understand the quantitative methods covered in the course and how they can be applied to analyze a variety of financial issues.
(ii) Interpret the results of quantitative analyses and think critically about the potential issues that arise when trying to draw conclusions from such results
(iii) students are expected to build study groups to have discussions and finish assignment given by the teacher..

Textbook

CFA textbook reading 5 to reading 12, and appendix

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.

Library Source

Students can find reference books and exercises in the library or related materials on the Internet.

Teaching methods

This course consists of lectures, discussions and student presentations. Students must be prepared to finish some small questions and small quizzes during the 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
Chapter Test	40%	There will be 8 chapter tests during the semester. 5% for each. The purpose of the chapter Tests is to ensure that students keep up with the readings.
Homework	10%	Homework problems will be assigned throughout the term, including but not limited to: terminologies, research project, and reading assignments.
Participation	10%	Individuals will be asked to participate individually in questions during the semester. Their performances should be counted in their participation.
Presentation	10%	Content50%+organization10%+language15%+performance25%
Attendance	10%	Refer to attendance policy listed below.
Total	100%	

Detailed Grade Computation

In a semester, the grade of attendance, participation, assignment/homework, and quiz accounts 60 percent in final grade, the Mid-Term Quiz and final exam accounts 20 percent in final grade, respectively. 40 percent before midterm, and 60 percent after midterm. That is shown as in the following table:

	Before midterm	After midterm

Attendance	5%	5%
Participation	5%	5%
Homework/assignment	5%	5%
Quiz	5%	5%
Chapter Test	40%	
Final exam		20%
Presentation		10%
Total	100%	

Grading Policy

A+ 100-95 A 94-90 A- 89–87

B+ 86-83 B 82-80 B- 79–77

C+ 76–73 C 72-70 C- 69–67

D+ 66–63 D 62-60 F 59-0

Quiz/Exam Schedule

Midterm Quiz: May 5-May 11

Final Exam: June 25-June 29

Homework

The homework of one class must be submitted before next class. Holiday assignment must be submitted on the first class after school reopens. No late homework is acceptable. All students should hand in homework and assignment with hard copies. Assignment should be printed with a headline of pledge of honesty. The score of assignment is determined by the accuracy and relevance. If students have English problems reading textbook or writing report, they should ask the teachers in the Learning Center.

Attendance

Being late for 15 minutes will result in unexcused absence. Each unexcused absence will result in 10% reduction of attendance grade. Five hours of unexcused absences will result in the lowering of grade by one level, i.e. A to A-. 15 hours (30% of total class hours) of absences under any circumstances forces a withdrawal from the course and get a grade of “F”. An excused

absence must be discussed directly with the teacher. An incomplete grade I will be considered in case of medical or family emergencies.**Students should attend class with their textbooks.**

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 hour to ask questions or talk with the instructor for good communication and effective learning. Frequent visiting instructor in office hour and checking your English will be highly evaluated. Any misbehavior and non-class related activities in class will result in the lowering of the participation grade, including ringing beepers and cell phones. All above behaviors will be solely evaluated by the instructor for scoring.

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.

Topical Course Outline

Week Index	**Content**
Week 1 **March 5-March 9**	**Syllabus Orientation**
	Introduction: course overview
	Exercises
Week 2 **March 12-March 16**	**a. interpret interest rates as required rates of return, discount rates, or opportunity costs;** **b. 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**

Week 3 **March 19-March 23**	**c. calculate and interpret the effective annual rate, given the stated annual interest rate and the frequency of compounding;** **d. 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;** **f. demonstrate the use of a time line in modeling and solving time value of money problems.** **Homework: practice test**
Week 4 **March 26-March 30**	**a. calculate and interpret the net present value (NPV) and the internal rate of return (IRR) of an investment;** **b. contrast the NPV rule to the IRR rule, and identify problems associated with the IRR rule;** **c. calculate and interpret a holding period return (total return);**
Week 5 **Apr 2-Apr 6**	**d. 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;** **e. calculate and interpret the bank discount yield, holding period yield, effective annual yield, and money market yield for a U.S. Treasury bill;** **f. convert among holding period yields, money market yields, effective annual yields, and bond equivalent yields.**
Week 6 **Apr 9-Apr 13**	**a. calculate and interpret relative frequencies and cumulative relative frequencies, given a frequency distribution;** **b. 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;** **c. calculate and interpret quartiles, quintiles, deciles, and percentiles;**
Week 7 **Apr 16-Apr 20**	**d. 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;** **e. calculate and interpret the coefficient of variation and the Sharpe ratio;** **f. explain measures of sample skewness and kurtosis and explain the use of arithmetic and geometric means when analyzing investment returns.**

Week 8 **Apr 23-Apr 27**	**a. 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;**
	b. 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;
	c. calculate and interpret covariance and correlation; conditional expectation in investment applications a tree diagram to represent an investment problem
	d. identify the most appropriate method to solve a particular counting problem and solve counting problems
Week 9 **Apr 30-May 4**	**a. construct a binomial tree to describe stock price movement;** **b. explain the key properties of the normal distribution;** **c. define shortfall risk, calculate the safety-first ratio, and select an optimal portfolio using Roy's safety-first criterion;** **d. define shortfall risk, calculate the safety-first ratio, and select an optimal portfolio using Roy's safety-first criterion;**
Week 10 **May 7-May 11**	**Midterm Quiz**
Week 11 **May 14-May 18**	**a.define simple random sampling and a sampling distribution;** **b.distinguish between time-series and cross-sectional data;** **c.explain the central limit theorem and its importance;** **d.identify and describe desirable properties of an estimator;**
Week 12 **May 21-May 25**	**a.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;** **b.explain a test statistic, Type I and Type II errors, a significance level, and how significance levels are used in hypothesis testing;** **c.explain a decision rule, the power of a test, and the relation between confidence intervals and hypothesis tests;** **d.distinguish between a statistical result and an economically meaningful result;**

Week 13 **May 28-June 1**	**a. 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;** **b. explain a test statistic, Type I and Type II errors, a significance level, and how significance levels are used in hypothesis testing;** **c. 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;**
Week 14 **June 4-June 8**	**a.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;** **b.identify and interpret common chart patterns;** **c.explain the use of cycles by technical analysts;**
Week 15 **June 11-June 15**	**Students' Presentation I**
Week 16 **June 18– June 22**	**Review Session for Final Examination**
Week 17 **June 25– June 29**	**Final Examination**

Teacher's Office Hour

The instructor's office hour is shown in the front of the office door. Students are required to use the instructor's office hour to ask questions or talk with the instructor once every two weeks 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 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. All students will be notified and a new syllabus will be given.*

2017-2018 Academic Calendar

Spring Semester, 2018	**March 4, 2018— July 20, 2018**
Mar.4	Registration
Mar.5	Classes Begin
Mar.16	Last Day to Drop or Add a Course
Apr.5	Qingming Festival (tentative)
Apr.20	Spring Sports (tentative)
May 1	Labor Day Holiday (tentative)
May.7 -11	Mid-Term Quizs
May 14-18	Summer School Registration (tentative)
June 18	Duanwu Festival (tentative)
June 25-29	Sophomore and Junior students' Final Exam
July 2-20	Sophomore and Junior students' Social Practice，Summer School
July 16-20	Revision and Final Exam Period
July 23	Summer Vacation Begins