

Hong Kong University of Science & Technology

Investment Analysis and Portfolio Management (FINA 221, 1A)

Fall 2005

Instructor: Prof. Nengjiu Ju
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Office hours: Tuesday & Thursday 15:00 – 17:00 or by appointment

Lectures: Tuesday & Thursday 13:30 – 14:50, Room 2406

Tutorials: Wednesday 13:00 – 13:50, Room 2464

Course Website: <http://webct.ust.hk/>

Demonstrator: Ms. Gina Kao
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Office hours: Wed 14:00 – 15:00, Room 3392

COURSE DESCRIPTION

This course is designed to provide a comprehensive introduction to investment theory and practice. This course will help you: 1) become familiar with a wide variety of financial securities found in equity, fixed-income and derivatives markets; 2) understand the theoretical basis for, and practical implementation of, widely-used asset pricing theories; 3) appreciate the fundamentals of portfolio management; and 4) develop important skills needed to succeed as an investment professional.

During the course we will come across some of the most important and influential concepts of finance theory: the Markowitz Portfolio Selection Model, Bill Sharpe's Capital Asset Pricing Model (CAPM), Steve Ross' Arbitrage Pricing Theory (APT), and the famous Black & Scholes option pricing formula. These concepts are so important that Nobel prizes have been awarded for their discovery! To read more about these concepts check out the web page of the Nobel Foundation: www.nobel.se/economics/index.html.

During this course you will also gain and improve your software skills in using the spreadsheet program Microsoft EXCEL and the financial data base REUTERS. These are valuable skills to have when you are looking for a job in the finance industry.

PREREQUISITES

The prerequisite for this course is FINA 111. Some of the material that we will cover is quite technical. It is therefore advisable to review basic mathematical and statistical concepts such as: probability distribution, mean (average), variance, covariance and basic linear algebra concepts such as: vectors, matrices and their manipulations and basic finance concepts such as: present value, interest calculations, at the beginning of the course. It is also of extraordinary importance that you familiarize yourself with the spreadsheet program Microsoft EXCEL. If you have never used EXCEL, I strongly recommend that you go through the self-guided on-line EXCEL tutorial.

REQUIRED READING MATERIALS

Textbook: Z. Bodie, A. Kane and A.J. Marcus, Investments (6th edition), McGraw Hill Irwin. The official web site for this textbook contains additional background materials, recent investment news, and on-line practice quizzes.

GRADING

Your final grade will be based on homework assignments and two exams. The relative weightings are as follows.

Homework assignments	20%
Midterm exam	30%
Final exam	50%

Note: the final exam is inclusive, meaning that it includes materials before the midterm. However, the focus will be on the materials after the midterm.

HOMEWORK AND TUTORIALS

The homework assignments are to be done on a team basis with three people in each group. Your team should stay together until the end of the term. Each team needs to submit only one write-up of each homework assignment, and all team members will receive the same grade for their work. Therefore it is important that all team members contribute equally to the homework assignments. If you feel that some team members do not contribute their fair share to the assignments you should talk to Ms. Kao or me. We will treat any complaints fully confidential.

Please inform Ms. Kao of your team members by September 7 in the first tutorial session.

Each homework assignment must contain a cover page that lists the group number, the names and student id numbers of the members of the group that contributed to the assignment. Only those students whose names appear on the cover page will receive credit for their homework assignment.

All homework assignments should be written in an easily readable fashion. Therefore, I encourage you to type the assignment. If your handwriting is difficult to decipher you may lose 5-10% of homework grade, depending on the severity of the problem.

Homework assignments have to be submitted before 1:00 pm on the due dates to Ms. Kao in order to receive full credit. For each day late you will incur a penalty of 20% of the maximum grade of the assignment.

Homework assignments will be returned during the next tutorial session. During the tutorials you will have the opportunity to ask questions and discuss any problems with Ms. Kao. The tutorial sessions are mandatory.

EXAMS

There are two comprehensive exams, a midterm and a cumulative final, which will mostly consist of numerical problems, NOT multiple choice problems.

Absence from the exams will not be excused except for serious medical illness. A doctor's letter must be provided within one week of the exam.

Cheating will not be tolerated. Any student caught cheating during the exams will receive zero credit and may face further disciplinary action.

MID-TERM MAKEUP

There will be **NO** makeup for midterm, even for legitimate absence. Instead, the final will count for 80%, rather than 50%. I strongly encourage you to take the midterm by any means. If you miss it, you only have one shot (the final exam).

CLASS PARTICIPATION

Active class participation is important for your learning experience and highly encouraged. It helps you to think actively rather than passively. Your class participation also provides me with feedback to gauge whether you understand the material. Often students ask me to write a letter of reference on their behalf. Please keep in mind that if you have never participated in class, I will not be able to write a letter for you.

IMPORTANT DATES

Tutorials

- Excel Demonstration (Sep. 14, 13:00-13:50 and PC Lab, Room 3211/3212) --
- Reuters Demonstration (Sept 15)
- Venue: Library Computer Lab LG1332, next to Media Resources

Homework Assignments

- First Homework Assignment Due (Wednesday before 1:00pm, Sept 21)

- Second Homework Assignment Due (Monday before 1:00pm, Oct. 24)
- Third Homework Assignment Due (Wednesday before 1:00pm, Nov. 16)
- Fourth Homework Assignment Due (Wednesday before 1:00pm, Nov. 23)
- Fifth Homework Assignment Due (Friday before 1:00pm, Dec. 2)

Exams

- Midterm: Oct. 27, 6-8pm at LTC
- Final: time and room to be announced

COURSE OUTLINE AND READING ASSIGNMENTS

Topic 1: Financial Markets and Instruments (Sept. 1, 6)

- Real and financial assets
- Overview of financial markets
- Financial instruments
- Market participants and their objectives
- Financial markets in Hong Kong

Readings: Chapters 1 and 2

Topic 2: Securities Trading (Sept. 8, 13)

- Arbitrage and equilibrium
- Securities markets (centralized exchanges, OTC markets)
- Financial market indices
- Market makers
- Trading costs
- Types of orders
- Margin trading and short sale
- Mutual fund
- Securities trading and investing in Hong Kong

Readings: Chapter 3, 4

Reuters Demonstration (Sept 15)

Venue: Library Computer Lab LG1332, next to Media Resources

First Homework Assignment Due (Wednesday before 1:00pm, Sept 21)

Topics 3: Risk and Returns (Sept. 20, 22, 27)

- Arithmetic and geometric mean returns
- Expected return and variance
- Risk and returns from historical perspectives
- Risk premium
- Expected utility and risk aversion
- Mean-variance approach

Readings: Chapters 5, 6

Topic 4: Asset Allocation and Diversification (Sept. 29, Oct. 4)

- Portfolio mathematics
- Asset allocation between a risky and a risk-free assets
- Asset allocation between two risky portfolios
- Optimal risky portfolio of many risky assets
- Markowitz portfolio selection model in the real world
- Efficient frontier
- Separation property
- Mutual fund theorems

Readings: Chapters 7, 8

Topic 5: Capital Asset Pricing Model (Oct. 6, 13)

- Underlying assumptions of CAPM
- Implications of CAPM
- Security market line
- Applications of CAPM

Readings: Chapter 9

Topic 6: Factor Models and Arbitrage Pricing Theory (Oct. 18, 20)

- Single index models
- Multifactor models

Readings: Chapters 10, 11

Problem Solving of Chapters 5-11 (Oct. 25)

Second Homework Assignment Due (Monday before 1:00pm, Oct. 24)

Midterm Exam: Oct. 27, 6-8pm at LTC

Topic 7: Fixed Income Securities and Term Structure of Interest Rates (Nov. 1, 3)

- Bond characteristics
- Government and corporate bonds
- Default risk
- Bond pricing
- Bond yields
- Yield curve
- Forward rates
- Expectation hypothesis
- Liquidity preference

- Interpretation of the term structure of interest rates

Readings: Chapters 14, 15

Topic 8: Bond Portfolio Management (Nov. 8)

- Interest rate sensitivities of bond prices
- Interest rate risk
- Bond duration
- Immunization techniques

Readings: Chapters 16

Problem Solving of Chapters 14-16 (Nov. 10)

Third Homework Assignment Due (Wednesday before 1:00pm, Nov. 16)

Topic 9: Securities Analysis (Nov. 15)

- Macroeconomic and industry analysis
- Dividend discount models
- Price-earnings ratio
- Inflation and stock valuation
- Financial statement analysis

Readings: Chapters 17, 18

Problem Solving of Chapters 17-18 (Nov. 17)

Fourth Homework Assignment Due (Wednesday before 1:00pm, Nov. 23)

Topic 10: Efficient Market Hypothesis (Nov. 22)

- Random walk
- Different forms of EMH
- Implications of EMH
- Small firm effect, January effect, and other market anomalies

Readings: Chapter 12

Topic 11: Portfolio Performance Evaluation (Nov. 24)

- Risk adjusted returns
- Performance measures

Readings: Chapter 12

Topic 12: Futures and Options (Nov. 29, Dec. 1, 6)

- Futures market
- Futures trading strategies
- Determination of futures price
- The importance of options
- Option trading strategies
- Put-call parity
- Black and Scholes option pricing formula

Readings: Chapters 20, 21, 22

Fifth Homework Assignment Due (Friday before 1:00pm, Dec. 2)

Final Exam (time and room to be announced)