Hong Kong University of Science & Technology

Investment Analysis and Portfolio Management

Fall 2003

Instructor:	Prof. Tim Adam
Office:	Room 5482
Phone:	2358-7675
Office hours:	Wed 17:00 – 18:00 & Fri 17:00 – 18:00

Lectures:	1B: Wed 14:00 – 15:20 & Fri 14:00 – 15:20, Room 4117
	2B: Wed 15:30 – 16:50 & Fri 15:30 – 16:50, Room 4117
Tutorials:	Mon 14:00 – 14:50, 15:00 – 15:50, 16:00 – 16:50, Room: TBA

Course Website: *http://www.bm.ust.hk/~adam/fina221.html*

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Office hours:	Wed 10:00 – 12:00, Room 3392

COURSE DESCRIPTION

This course provides you with an introduction to the most fundamental aspects of investments. You will learn how to trade on financial exchanges, how to allocate money across several different types of securities/assets (how to <u>invest</u> rather than to speculate), how to determine the *fair* price of a financial security, and how to determine whether a portfolio manager is doing a good job. You will also learn how to manage a portfolio consisting of fixed-income securities, and how to price, trade and speculate with derivative securities (options and futures).

During the course we will come across some of the most important and influential concepts of finance theory: the Markowitz Portfolio Selection Model, the Capital Asset Pricing Model (CAPM), the concept of arbitrage, and the Black & Scholes option pricing formula. These concepts are so important that Nobel prices have been awarded for their discovery! To read more about these concepts check out the web page of the Nobel Foundation: http://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 the successful completion of 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: net present value, interest calculations, probability theory, and regression analysis at the beginning of the course. I have put some material on reserve that may be helpful to you.

It is also of extraordinary importance that you familiarize yourself with the spreadsheet program Microsoft EXCEL. We will be using this program extensively throughout the semester. In the past many students have wasted a lot of time simply because they did not know how to use EXCEL effectively. If you have never used EXCEL, I strongly recommend that you go through the self-guided on-line EXCEL tutorial.

REQUIRED READING MATERIALS

1. Textbook

- Z. Bodie, A. Kane and A.J. Marcus (BKM *Essentials*), *Essentials of Investments* (4th edition), Mc-Graw Hill Irwin, 2001

  http://www.mhhe.com/business/finance/bkm/essentials4e/student_index.mhtml

  The official web site for this textbook contains additional backgound materials, recent investment news, and on-line practice quizzes.

  Alternatively, you can purchase the more advanced version of the above textbook:

- Z. Bodie, A. Kane and A.J. Marcus (BKM), *Investments* (5th edition), Mc-Graw Hill Irwin, 2002

2. Supplementary Materials (required)

- *Financial Times* - one of the best daily newspapers in the world. To take advantage of the special student subscription rate of $1400 for one year (you can cancel at any time and receive a pro-rated refund!) log on to www.ftasia.net and click on 'student subscriptions'. Alternatively, you can subscribe to the *Asian Wall Street Journal* ($1275 for 1 year).

- Young, L.S.F. and Chiang, R.C.P. (eds.), *The Hong Kong Securities Industry*, The Stock Exchange of Hong Kong Ltd., 1997. This book is available from the library reserve desk.

- Register for an investment account at *www.stocktrak.com* This account gives you US$100,000 in virtual money and lets you trade in almost 700 stocks at 13 different exchanges from around the world (including Hong Kong). The account allows you to apply the material you will learn in this course in a real setting, without committing your own money. The registration fee is US$18.95 (HK$148) per account, which must be paid by credit card. Up to four students may sign up for one account.

GRADING

Your final grade will be based on homeworks, two exams, and the performance on web-based quizzes. The relative weightings are as follows.

Homeworks	30%
Midterm exam	30%
Final exam	35%
Quizzes, etc.	5%

HOMEWORK AND TUTORIALS

- There are four homework assignments, which are to be done on a team basis. Each team should consist of up to four people from either course section (L3 or L4). 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 10.

- Each homework assignment **must** contain **<u>a cover page</u>** 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 essay parts of each homework assignment. For equations, graphs, figures, etc. you should use a pen instead of a pencil. If your handwriting is difficult to decipher you may loose 5-10% of the maximum homework grade, depending on the severity of the problem.

- Some homework assignments require you to extract data from the REUTERS. A demonstration of REUTERS has been scheduled for (TBA) in the library. All students are required to attend the demonstration.

- The homework assignments will contain some problems from the end-of-chapter problems of the textbook. Since the solutions are available from the library reserve desk, these problems will not be graded. These problems are meant only as an exercise, and to give you some guidance on what type of questions to expect on quizzes and exams. Of course, it would be counterproductive if you read the answers before you have attempted to solve the problems yourself.

- All four homework assignments are available from the course website. Homeworks have to be submitted **before noon** 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 assignment will be returned during the tutorial sessions. will be scheduled during the week following the due date of each. During these tutorials the graded homework assignments, and you will have the opportunity to ask questions and discuss any problems with Ms. Kao. The tutorial sessions are mandatory

STOCK-TRAK

- Your homework team should also sign up for a Stock-Trak investment account by September 10. Ms. Kao will provide you with an investment account number. Once you have your account number go to *www.stocktrak.com* to open and register your account. Registration requires a credit card, and the registration fee is US$18.95. Only one account per homework group is necessary, but if you wish you can also register for your own account.

- You'll be given an imaginary US$100,000 and can trade Hong Kong and international stocks, options, futures, mutual funds, and bonds during an 12-week period (September 15 until December 7). The best three teams will earn bonus points that count towards the final exam.

- From time to time I will impose certain constraints on your portfolio allocations. For example, I will ask you to short-sell a stock, buy on margin, or conduct an options trade. Each week that your portfolio violates an imposed restriction, your final portfolio ranking will be lowered by one notch.

- For the last homework (the fourth homework set) you need to summarize your trading strategies during the semester. It is therefore advisable to keep track of your trades and why you made those trades throughout the semester. Even if your actual portfolio performance turned out to be poor you can still earn a top score if you write an interesting summary about your trading experiences and what you have learned during the exercise.

EXAMS / QUIZZES

- There are two comprehensive exams, a midterm and a **cumulative** final, which will consist of short-answer and multiple-choice questions.

- Absence from the exams will not be excused except for serious medical or family reasons (a doctor's letter must be provided within one week of the exam).

- Quizzes will be administered weekly (Tuesdays) over the web, and cover the reading material of the next 1-2 lectures. These quizzes consist of 10 multiple-choice questions, and are intended to encourage you to read the text book chapters **before** each lecture.

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

CLASS PARTICIPATION

Class participation is highly encouraged. It helps you to think *actively* rather than *passively*. Your class participation also provides me with feedback to me 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 on your behalf.

IMPORTANT DATES

September 10	Inform Ms. Kao of homework group
September 10	Register for Stock-Trak
October 3	1. Homework set due
October 15	2. Homework set due
October 24	Midterm exam, 6:00 – 8:00 pm
November 19	3. Homework set due
December 5	4. Homework set due
TBA	Final exam

WEB QUIZZES (I will provide you a tutorial schedule later when ARRO has confirmed)

Sept. 16 - BKM *Essenstials*: Chapter 3
Sept. 23 - BKM *Essenstials*: Chapter 6
Sept. 30 - BKM *Essenstials*: Chapter 7
Oct. 7 - BKM *Essenstials*: Chapter 8
Oct. 28 - BKM *Essenstials*: Chapter 9
Nov. 4 - BKM *Essenstials*:Chapter 10,11
Nov. 18 - BKM *Essenstials*: Chapter 18
Nov. 26 - BKM *Essenstials*: Chapter 16

COURSE OUTLINE AND READING ASSIGNMENTS

Sept. 3 **Overview of Course**

- Mathematical Review

Sept. 5 **Lectures 1: Introduction to Investments**
Financial securities
Financial markets
Market participants

- BKM *Essentials*: Chapter 1, Sections 1.1 – 1.7
- BKM: Chapter 1, Sections 1.1 – 1.5

Tutorial **REUTERS Demonstration**
Library Computer Lab LG1332, next to Media Resources

Sept. 10 **Lectures 2: Financial Markets & Instruments**
The investment environment in Hong Kong
Yields and returns

- BKM *Essentials* & BKM: Chapter 2
- The Hong Kong Securities Industry, Chapter 3: *Hong Kong's Financial Markets*

Tutorial **EXCEL Demonstration**

Sept. 17 **Lecture 3: Trading Securities I**
Financial market indices
Trading securities: orders types, limit order book

- BKM *Essentials* & BKM: Chapter 3
   - The Hong Kong Securities Industry, Chapter 6: *Stock Market Indices*

Sept. 19 **Lecture 4: Trading Securities II**
Trading securities: margin trading, short sales

- BKM *Essentials* & BKM: Chapter 3
   - The Hong Kong Securities Industry, Chapter 5: *Exchange-Based Trading and Settlement*

Sept. 24 **Lecture 5: Two Determinants of Investment Decisions**
Measuring risk and return
Arithmetic and geometric returns

- BKM *Essentials*: Chapter 6, Sections 6.1 – 6.4
- BKM: Chapters 5, 6.2 and 24.1

Sept. 26 **Lecture 6: Portfolio Mathematics**
Probability distributions
Calculating expected returns and risk measures

- BKM *Essentials*: Chapter 6, Sections 6.5 – 6.6
- BKM: Chapter 7 (except 7.4)

Oct. 3 **Lecture 7: Portfolio Analysis**
Asset allocation between a risky and a risk-free portfolio
Asset allocation between two risky portfolios

- BKM *Essentials*: Chapter 7, Sections 7.1 – 7.4
- BKM: Chapter 8, Sections 8.1 – 8.4 & 8.5 (separation property)

Oct. 8 **Lecture 8: The Markowitz portfolio selection model**
The Markowitz portfolio selection model in the real world
The efficient frontier
Separation property

- BKM *Essentials*: Chapter 7, Sections 7.1 – 7.4
- BKM: Chapter 8, Sections 8.1 – 8.4 & 8.5 (separation property)

Oct. 10 **Lecture 9: The Mutual Fund Industry**
A presentation by the Hong Kong Investment Funds Association

- BKM *Essentials*: Chapter 4 (except 4.5) & Chapter 5, 5.1 – 5.4
- BKM: Chapter 4 (except 4.5 – 4.6) & Chapter 26, 26.1 – 26.3

Oct. 15 **Review Session**

Oct. 17, 22 **Lectures 10-11: The Capital Asset Pricing Model (CAPM)**

- BKM *Essentials*: Chapter 7, 7.5 & Chapter 8, 8.1 – 8.4
- BKM: Chapter 10, 10.1 – 10.2 & Chapter 9, 9.1 – 9.2

Oct. 24 **Midterm Exam**
Time: 6:00 – 8:00 pm, Location: TBA

Oct. 29, 31 **Lectures 12-13: The Efficient Market Hypothesis**
Are markets efficient?

Implications for investment policy

- BKM *Essentials*: Chapter 9
- BKM: Chapter 12

Nov. 5 **Lecture 14: Portfolio Performance Evaluation**
Risk-adjusted returns
Measuring performance

- BKM *Essentials*: Chapter 19, Section 19.1
- BKM: Chapter 24, Section 24.2 – 24.3

Nov. 7 **Stock Trading Game - Market Efficiency**
Location: Stock Trading Lab, Room # 3211

Nov. 12, 14 **Lectures 15-16: Fixed-Income Securities**
Bond prices and yields
Forward interest rates

- BKM *Essentials*: Chapter 10, Sections 10.1 – 10.4
- Handout: BKM on forward rates, Chapters 15.1 – 15.2
- BKM: Chapter 14 (except 14.4)

Nov. 19 **Lectures 17: The Yield Curve**
The term structure of interest rates

- BKM *Essentials*: Chapter 10, Section 10.6
- BKM: Chapter 15, Sections 15.1 – 15.4

Nov. 21 **Lecture 18: Managing Fixed-Income Portfolios**
Duration and portfolio immunization

- BKM *Essentials*: Chapter 11, Sections 11.1 – 11.2
- BKM: Chapter 16, Sections 16.1 – 16.3

Nov. 26, 28 **Lectures 19-20: Futures**
Futures markets and trading strategies
The determination of futures prices
Movie: Trading Places (last scene – futures pit) or LTCM (by PBS)

- BKM *Essentials*: Chapter 18, Sections 18.1 – 18.4
- BKM: Chapter 22, Sections 22.1 – 22.4

Dec. 3, 5 **Lectures 21-22: Options**
How important are options?
Options trading strategies

Put-call parity
The Black & Scholes option pricing formula

- BKM *Essentials*: Chapter 16, Sections 16.1 – 16.2 & Chapter 17, Sections 17.1 & 17.3
- BKM: Chapter 20, 20.1 – 20.4 & Chapter 21, 21.1 & 21.4
  - The Hong Kong Securities Industry, Chapter 7: *Derivative Instruments – Options, Warrants and Futures*

TBA **Final Exam**

STOCK-TRAK
Portfolio Simulation Game

http://www.stocktrak.com/

Initial cash balance: US$100,000

Securities that can be traded: Stocks, bonds, mutual funds, futures, and options. There are almost 700 stocks at 13 different exchanges from around the world available for investment. Stocks from Hong Kong are listed under *International Stocks*.

Position limit: 25% of the initial cash balance. This means that you cannot use more than US$25,000 to purchase stock in a single company.

Trade limit: You can make at most 100 trades during the semester.

Types of trades: You can buy and sell any securities. You can also short-sell stock and buy on margin. The margin requirement for stock purchases and short sales is 50%.

Trading costs: Trades made on the web page offer a discounted commission of a flat rate of $25. Trades made via the phone carry a commission of $50.00 plus $5.00 per lot (futures contract, bond, options contract, etc.). Mutual funds have a 1% front-end load.

Trading Hong Kong stocks: To buy/sell stocks that trade in Hong Kong go to "Make a Trade," and then click on "International Stocks." Now click on "Hong Kong Stock Exchange," enter your account number, your password, and your e-mail account, and then specify what transaction you would like to perform.

The following Hong Kong stocks are available for investment in stocktrak (Foreign trading places are given in parenthesis)

HANG SENG INDEX STOCKS	NON-INDEX STOCKS
Amoy Properties	Cafe de Coral Holdings
Bank of East Asia (OTCF)	City Telecom (NASDAQ)
Cathay Pacific	Cosco Pacific
Cheung Kong Holdings (OTCF)	I-Cable Communications (NASDAQ)
Cheung Kong Infrastructure	Legend Holdings
China Resources (NASDAQ)	New World Cyberbase
China Telecom (NYSE)	Pacific Century CyberWorks
Citic Pacific	Shanghai Petrochemical
CLP Holdings	Stone Electronic
Hang Lung Development (OTCF)	Tsingtao Brewery (OTCF)
Hang Seng Bank	Vtech Holdings (OTCF)
Henderson Investment	
Henderson Land	
Hong Kong & China Gas	
Hongkong Electric	
HSBC Holdings (OTCF)	
Hutchison Whampoa	
Hysan Development (OTCF)	
Johnson Electric	
New World Development (OTCF)	
Shanghai Industrial	
Shangri-La Asia	
Sino Land	
Sun Hung Kai Properties	
Swire Pacific	
Television Broadcasts	
Wharf (Holdings)	
Wheelock & Co	