

**Graduate School of Business  
University of Chicago**

## **Bus 35000: Investments**

Spring 2007

### **Professor Ioanid Rosu**

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Lectures	Wed 6:00–9:00pm, Gleacher 206 (Sec. 82) Thu 1:30–4:30pm, HPC 06 (Sec. 02) Sat 1:00–4:00pm, Gleacher 206 (Sec. 85)
Office Hours	Tue 6:30-7:30pm, Wed 4:30-5:30pm, or by appt.
Review Sessions	Tue 5:00-6:30pm, HPC 06 Sat 4:10-5:40pm, GC 206
TA	Denis Chaves, dchaves@ChicagoGSB.edu

### **Course Description**

This course offers the financial theory and quantitative tools necessary for understanding how stock, bond, and option prices are determined, and how financial assets are used for investment decisions. Topics covered include modeling the relation between risk and return, optimal portfolio selection based on mean–variance analysis, asset pricing models, money management, practical asset allocation, and more. The focus is mainly on common stocks, but fixed income securities (bonds) and derivative securities (options, futures, swaps) are also analyzed.

The course is quantitative and challenging. Rather than delving into the details of current practice, it takes a rigorous and critical view to the process of investing. The aim is to provide the students with a lasting conceptual framework in which to view and analyze investment decisions. At the same time, the course will discuss alternative philosophies of investing, and relate the material to current financial news and to problems relevant to the practitioner.

### **Prerequisites**

Business 30000 (Financial Accounting), 33001 (Microeconomics), and either 41000 (Business Statistics) or 41100 (Applied Regression Analysis). Students are expected to understand the fundamentals of statistics and multiple regression analysis, and to be able to apply these fundamentals using a software package such as Excel or Matlab.

## Office Hours, Review Sessions

My office hours are every Wednesday, 4:30-5:30pm. I will also be available at Gleacher one hour before class on Saturday (12:00-1:00pm). You are welcome to stop by my office if you have any questions. If it is not convenient for you to come during my office hours, feel free to email or call me to set up an appointment. I also encourage you to share with me any comments you might have on the course.

The teaching assistant for this course is Denis Chaves, a Ph.D. student in Finance. Feel free to contact Denis with questions regarding the course material, especially those related to the projects and homework assignments. The best way to reach him is by e-mail at

dchaves@ChicagoGSB.edu.

Denis will hold weekly review sessions every Tuesday, 5:00-6:30pm in HPC 03, starting on the second week of classes, and every Saturday, 4:10-5:40pm at Gleacher 206, starting on the first week of classes. In those sessions, he will first go over some relevant problems and calculations, and then answer your questions. The sessions are optional, but strongly recommended for those with questions about the course material, assignments, projects, and exams.

## Course Web Page

I have set up the course Web page on the University's Chalk system

<http://chalk.uchicago.edu>

To access the web page, you need the University's CNetID and password. In case you don't have these yet, you can claim them at <http://cnet.uchicago.edu>.

## Grading

The course requirements are a Midterm exam, a Final exam, eight graded Homework assignments, one Case write-up, and a Stock Tracking and Investment project. *Everything* is optional *except* the DFA case write-up, the stock tracking project, and the final. In other words, the homework assignments and the midterm can only help you, they cannot hurt you. You are allowed to drop any of these and place added weight on the final.

Weightings on the various components of the final grade are as follows:

DFA Case Write-up	4%			
Tracking & Investment Project	8%			
Homework Assignments	18%	or		0%
Midterm	25%	or		0%
Final	45%	< $x$ <		88%

Class participation will help decide letter grades at the margin. Many of you have useful professional experience that can undoubtedly benefit our class discussions. Do not hesitate to share your experience with the rest of the class!

## Exams

The Midterm exam will be held during the first half of the class on Week 6; more precisely: **Thu May 3, 1:30–2:50pm** (Sec. 02), **Wed May 2, 6:00–7:20pm** (Sec. 82), **Sat May 5, 1:00–2:20pm** (Sec. 85). The Final exam will be held on **Thu Jun 7, 3:00–6:00pm** (Sec. 02), **Wed Jun 6, 6:30–9:30pm** (Sec. 82), **Sat Jun 9, 1:00–4:00pm** (Sec. 85). The final exam will be cumulative, but it will focus more on the issues covered after the midterm. Both exams will be *open-book*. Calculators are permitted, except those with word-processing capabilities.

You may request a re-grade on any exam or assignment. Each re-grade request must be accompanied by a concise written explanation of the request and submitted to me within one week after I distribute graded exams or assignments. The whole exam will be re-graded, so your score can either increase or decrease as a result.

Requests for rescheduling exams will not be granted, except in extraordinary circumstances.

## Homework and Case Assignments

Eight homework assignments will be given, which consist of problems and several applications to real data. The latter are designed to apply techniques learned in the course to real data in a manner similar to what might be applied in practice. Keep in mind that exam questions will be similar to the assigned homework problems. In determining your total grade for the homework, I will only count **your best six problem sets**. Note that the case write-up is separate from the homework assignments.

There will be a case write-up in this course. Details of this assignment will be provided later.

You may do the homework problems and the case write-up in groups that **are not to exceed FOUR people**. (Groups with more than four people will not receive credit.) The case write-up is not to exceed four typed pages.

## Stock Tracking and Investment Project

The purpose of this project is to enhance your understanding of what makes stock prices move and to improve your ability to follow and digest financial news. Moreover, you will manage a portfolio formed with various financial assets, including the stock of a company of your choice.

At the beginning of the quarter, you will choose one company whose stock you will follow throughout the quarter. At the end of the quarter, you will turn in a brief report on how the company has done and why. At the same time, you will manage a portfolio formed with any financial assets you want, including futures, mutual funds, international assets, and options. You will then trade in these assets, and write a report on how your portfolio performed. The portfolio will be managed using Stock-Trak (<http://www.stocktrak.com>). Each student registered in the course will automatically be given a free account on the Stock-Trak webpage.

The work on these reports is to be done **individually**. The reports will be graded. In addition, your portfolios will be ordered according to their realized returns during the quarter, and the best portfolio managers will be announced in the last class session. Don't worry, the performance of your portfolio will not affect your grade.

## Honor Code

Students in this course are required to adhere to the standards of conduct in the Honor Code and Standards of Scholarship. Each student shall sign the following pledge on each exam: “I pledge my honor that I have not violated the Honor Code during this examination.” Except for members of your study group, you should not discuss the problems, cases, or exams with other members of this or any other class, or with former BUS 35000 students. In the future, you should not discuss the problems and cases with students then taking BUS 35000. If you are in doubt about whether something is acceptable under the honor code, you should not hesitate to ask me.

## Course Materials

- **Required Text**

1. Bodie, Zvi, Alex Kane, and Alan Marcus, *Investments*, McGraw-Hill, 7th Edition, 2008 (**BKM**).

- **Recommended Texts**

1. Malkiel, Burton, *A Random Walk Down Wall Street*, Norton, 9th Edition, 2007 (**RWDWS**);
2. Siegel, Jeremy, *Stocks for the Long Run*, McGraw-Hill, 3rd Edition, 2002 (**SLR**).

The recommended texts will not be explicitly employed in the course, but may provide additional insight into some of the topics covered.

- **Course Packet**

The packet contains the syllabus and some relevant articles from practitioner as well as academic journals. Some of the articles are required and some are optional, as detailed later in the syllabus. I will require you to read only the relevant material that is within your reach. Nevertheless, students planning on a finance career are encouraged to read through the packet in its entirety.

- **Lecture Slides and Handouts**

When presenting the class material, I tend to follow my lecture notes. These notes are not included in the packet, because I often update them with new information shortly before class. I will make these notes available to you before each class.

Practice exams will also be posted on the class web page prior to the exams. I may also periodically hand out current newspaper and magazines articles relevant to the course topic.

## Course Outline and Readings

This an *approximate* schedule of topics that will be covered. You should read the corresponding material in the text prior to the lecture. “BKM” refers to the book by Bodie, Kane and Marcus; “RWDWS” refers to the book by Malkiel; and “SLR” refers to the book by Siegel. Unless otherwise stated, the listed articles are included in the course packet. Required readings are denoted by **R**, and optional readings are denoted by **O**.

## Course Outline and Readings

(Required readings are denoted by “**R**”, optional readings by “**O**”.)

### Week One – *Risk and Return; Asset Pricing and Present Value* (March 28/29/31)

- Course Outline and Introduction
- Overview of Financial Markets
- Risk and Return
- Asset Pricing and the Present Value Formula
  - BKM, chapters 1, 2, 3, 5 (**R**: all), chapter 18 (**O**)
  - Greenleaf, Foster, and Prinsky, *Understanding the Financial Data in the Wall Street Journal*, Dow Jones, 1989 (updated 2004) (**O**)
  - Dimson, Marsh, and Staunton, *Risk and Return in the 20<sup>th</sup> and 21<sup>st</sup> Centuries*, Business Strategy Review, 2000 (**R**)
  - RWDWS, chapters 3, 13 (**O**)
  - SLR, chapters 1, 2 (pp. 25–34), 5, 6, 9 (**O**)

### Week Two – *Fixed Income* (April 4/5/7)

\*\*Problem Set #1 Due\*\* (beginning of class)

- Bond Prices and Yields
- The Term Structure of Interest Rates
- Duration Matching and Immunization. Convexity
  - BKM, chapters 14, 15 (**R**: all), 16 (**R**: sections 1–3)

### Week Three – *Asset Allocation; Mean–Variance Analysis* (April 11/12/14)

\*\*Part I of Stock Tracking and Investment Report Due\*\* (beginning of class)

\*\*Problem Set #2 Due \*\* (beginning of class)

- Risk and Risk Aversion
- Asset Allocation
- Portfolio Theory and Mean-Variance Analysis
- Diversification
  - BKM, chapters 6, 7 (**R**: all)
  - RWDWS, chapter 8 (**O**)
  - SLR, chapters 2 (pp. 36–41), 10 (**O**)

**Week Four** – *The Capital Asset Pricing Model* (April 18/19/21)

**\*\*Problem Set #3 Due\*\*** (beginning of class)

- The Capital Asset Pricing Model (CAPM)
- Applications of CAPM
  - BKM, chapter 9 (**R**)
  - BKM, section 13.1 (**R**)
  - RWDWS, chapter 9 (**O**)

**Week Five** – *Practical Asset Allocation; Arbitrage Pricing Theory* (April 25/26/28)

**\*\*Problem Set #4 Due\*\*** (beginning of class)

- Harvard Management Company
- International Investments, Life-Cycle Investing
- The Black and Litterman Model
- Multifactor Models and Arbitrage Pricing Theory
- The Fama & French 3-Factor Model
  - BKM, chapter 25, 26; 8, 10 (**O**: all)
  - BKM, sections 13.2, 13.3 (**R**: all)
  - Economist Staff, *In Praise of Common Sense*, Economist, Jun.22, 2002 (**R**)
  - Light, *Harvard Management Company*, Harvard Business School Case, 2001 (**R**)
  - Jorion, *Asset Allocation with Hedged and Unhedged Foreign Stocks and Bonds*, Journal of Portfolio Management, Jul. 1989 (**O**)
  - Bower, Bower, and Logue, *A Primer on Arbitrage Pricing Theory*, Midland Corporate Finance Journal, 1986 (**O**)
  - Fama and French, *The Cross-Section of Expected Stock Returns*, Journal of Finance, Jun. 1992 (**O**)
  - RWDWS, chapters 12, 14 (**O**)
  - SLR, chapter 21 (**O**)

**Week Six** – *Midterm; Market Efficiency – Introduction* (May 2/3/5)

**\*\*Midterm Exam\*\*** (first half of class)

- The Efficient Market Hypothesis
- Market Predictability and Random Walks
- Market Efficiency: Event Studies
  - BKM, chapter 11 (**O**)
  - RWDWS, chapters 2, 4, 5, 6, 7 (**O**)
  - SLR, chapters 17 (**O**)

**Week Seven** – *Market Efficiency and Anomalies* (May 9/10/12)

**\*\*Problem Set #5 Due\*\*** (beginning of class)

- Market Anomalies
- Momentum, Reversals and Other Price Patterns
- The Rational vs. Behavioral Debate
- Efficiency and Arbitrage
  - BKM, chapter 11, 12 (**R**: all)
  - BKM, sections 13.5, 13.6 (**O**)
  - Schwert, *Anomalies and Market Efficiency*, ch.15 in Constantinides et al, *Handbook of the Economics of Finance*, 2003 (**O**)
  - RWDWS, chapters 2, 4, 5, 6, 7, 10, 11 (**O**)
  - SLR, chapters 17, 18, 19 (**O**)

**Week Eight** – *Money Management Industry; Forwards, Futures and Swaps* (May 16/17/19)

**\*\*Problem Set #6 Due\*\*** (beginning of class)

**\*\*Case Write-up for DFA due\*\*** (beginning of class)

- The Money Management Industry
- Forwards, Futures
- Swaps
  - BKM, chapters 4 (**R**), 24 (**O**), 22 (**R**), 23 (**O**)
  - Cohen, *Dimensional Fund Advisors*, Harvard Business School Case, 2002 (**R**)
  - Lappen, *Ivory-tower Investing*, Institutional Investor, 1998 (**O**)
  - RWDWS, chapter 15 (**O**)
  - SLR, chapter 20 (**O**)

**Week Nine** – *Derivatives; Option Pricing* (May 23/24/26)

**\*\*Problem Set #7 Due\*\*** (beginning of class)

- Derivatives Markets
- Option Pricing
- The Black–Scholes Formula
  - BKM, chapters 20, 21 (**R**: all)
  - Black, *How We Came Up with the Option Formula*, Journal of Portfolio Management, 1989 (**O**)
  - SLR, chapter 15 (**O**)

**Week Ten** – *Financial Innovation; Hedge Funds* (May 30/31/June 2)

\*\*Problem Set #8 Due\*\* (beginning of class)

\*\*Part II of Stock Tracking and Investment Report Due\*\* (beginning of class)

- Stock Tracking & Investment Discussion
- Financial Innovation; Structured Finance: Asset-Backed Securities
- Hedge Funds; Long-Term Capital Management
  - BKM, chapter 17 (**R**)
  - Gladwell, *Blowing Up: How Nassim Taleb Turned the Inevitability of Disaster into an Investment Strategy*, New Yorker, Apr.22, 2002 (**O**)
  - Peltz, *From Harvard to Hedge Funds*, Bloomberg Markets, Apr. 2004 (**O**)
  - Lewis, *How the Eggheads Cracked*, New York Times Magazine, Jan.24, 1999 (**O**)
  - Cochrane, *New Facts in Finance*, Economic Perspectives, 1999 (**O**)
  - SLR, chapters 12, 13, 14 (**O**)

**Week Eleven** – *Final Exam* (June 6/7/9)

**\*\*FINAL EXAM\*\***