

## **Financial Markets and Investment**

### ***Course Outline***

This course is concerned with the choice and evaluation of investment strategies, and modern portfolio management. The topics covered, time permitting, include:

- I. Portfolio Theory and Asset Allocation
- II. Portfolio Theory and Asset Allocation: Some Practical Considerations
- III. Risk and Return in Equilibrium: The Capital Asset Pricing Model (CAPM)
- IV. The CAPM: Empirical Evidence
- V. Multi-Factor Models and the Arbitrage Pricing Theory (APT)
- VI. Performance Evaluation
- VII. Market Efficiency and Return Predictability
- VIII. Options and Time-Varying Volatility
- IX. Futures
- X. Bonds and the Term Structure of Interest Rates

The goal of the course is to provide you with a deeper understanding and appreciation of the complex questions and tradeoffs facing any investor, and the necessary theoretical background to critically evaluate alternative investment strategies and the modern literature on investments. That is, the course is designed to provide a conceptual framework for analyzing investment decisions; not a recipe for how to make a quick buck on Wall Street.

The treatment of uncertainty is essential to investment management. Consequently, the course will entail the use of a number of statistical tools, ranging from the notion of probability distributions through linear regression analysis. The prerequisites for the course are Economics 205D or Economics 372, and a statistics course, such as Statistical Science 111, 230, 130, or 250, or Mathematics 230 or 342.

### ***Course Evaluation***

The course grade will be based on two group projects, a midterm quiz, and a final exam. The group projects and the midterm quiz are optional. The final is required. The midterm quiz will be held during class on Tuesday, October 22. The final exam is scheduled for Wednesday, December 11, 9am-noon. You must take the exams at the scheduled times. Topics not covered in class prior to the exams will not be on the exams.

Your course grade will be determined by the maximum total score obtained by weighting each of the group projects by 10%, the midterm quiz by 30%, with the remainder allocated to the score for the final exam:

	Date	Maximum Percent	Minimum Percent
Homework #1	TBA	10%	0%
Midterm Quiz	October 22	30%	0%
Homework #2	TBA	10%	0%
Final Exam	December 11	100%	50%

For example, suppose that your score for the two group homeworks are 95 and 90, respectively, your score for the midterm is 80, and your score for the final is 75. Your total score for the class would then be  $0.10 \cdot 95 + 0.10 \cdot 90 + 0.30 \cdot 80 + (1 - 0.10 - 0.10 - 0.30) \cdot 75 = 80$ . Thus, if you do well on both of the homeworks and the midterm, the final will “only” account for 50% of your overall grade. In some cases, I may also add a few bonus points to the total score based on your class participation and contribution to the classroom atmosphere. Since everything but the final exam is optional, the final will be comprehensive.

### ***Problems***

The Bodie, Kane and Marcus textbook has a number of concept checks throughout, with solutions at the end of each chapter. It is a good idea to carefully study these. There are also some problems at the end of each chapter. I will be posting suggestive solutions to these problems on the web. In addition, I will post a few computational type problem sets of my own. All of these problems are entirely optional and will not be collected or graded. However, from past experience there is usually a strong correlation between the time and effort spent on solving these problems and the final exam performance.

### ***Office Hours***

My office hours are Wednesdays from 1:30-3:00 pm. My office is Room 313 in the Social Science Building. If you are unable to see me during my office hours, or immediately after class, please email to set up an appointment. My email is: [boller@duke.edu](mailto:boller@duke.edu).

### ***Teaching Assistant***

The teaching assistant for the class is Bingzhi (Ben) Zhao. His email is: [bingzhi.zhao@duke.edu](mailto:bingzhi.zhao@duke.edu). Ben will be holding weekly office hours on Thursdays from 5:00-6:00pm in Room 301 (The Graduate Student Lounge) in the Social Science Building to help with questions about the lectures and the problems.

### ***Texts and Readings***

The required text for the course is:

Investments, Zvi Bodie, Alex Kane and Alan J. Marcus, 9<sup>th</sup> Edition, New York, NY: McGraw-Hill/Irwin, 2011.

The Bodie, Kane and Marcus (BKM) book provides a very comprehensive treatment of modern investment theory. We will not be able to cover the entire book in a single semester class. The

book also comes with several online tools and Excel spreadsheets that will be useful in solving the homework problems.

I will be posting some additional readings, along with my lectures, on the class website:

[www.econ.duke.edu/~boller/Econ.471](http://www.econ.duke.edu/~boller/Econ.471)

The additional readings are primarily meant to complement the book. Some of these are fairly technical, and I won't expect you to understand every detail.

I will also encourage you to keep abreast of daily events in financial markets by reading the Wall Street Journal or other news sources. If you come across something that is relevant for what we have discussed in class, please bring it up. I will do the same.

### ***Class Outline and Reading List***

Most of my lectures will follow the BKM book fairly closely. However, for some of the topics I will provide more detailed discussions and sometimes also a different point of view.

#### ***Lecture Series 0: Review Material***

##### A) Institutional Background

BKM, Chapters 1-4.

##### B) Statistical Review

BKM, "Quantitative Review," Appendix A.

Mark Kritzman, "What Practitioners Need to Know about Uncertainty," Financial Analysts Journal, 1991, Vol.47, No.2, pp.17-21.

Mark Kritzman, "What Practitioners Need to Know about Regressions," Financial Analysts Journal, 1991, Vol.47, No.3, pp.12-15.

#### ***Lecture Series I: Portfolio Theory and Asset Allocation***

BKM, Chapters 5, 6 and 7.

#### ***Lecture Series II: Portfolio Theory and Asset Allocation: Some Practical Considerations***

BKM, Chapter 8

Philippe Jorion, "Portfolio Optimization in Practice," Financial Analysts Journal, 1992, Vol.48, No.1, pp.68-74.

***Lecture Series III: Risk and Return in Equilibrium: The Capital Asset Pricing Model (CAPM)***

BKM, Chapter 9 and Section 27.3.

Fisher Black and Robert Litterman, "Global Asset Allocation with Equities, Bonds and Currencies," Goldman Sachs, Fixed Income Research, 1991.

***Lecture Series IV: The CAPM: Empirical Evidence***

BKM, Chapter 13.

Eugene F. Fama and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence," Journal of Economic Perspectives, 2004, Vol.18, No.3, pp.25-46.

***Lecture Series V: Multi-Factor Models and the Arbitrage Pricing Theory (APT)***

BKM, Chapter 10.

Richard Roll and Stephen A. Ross, "The Arbitrage Pricing Theory Approach to Strategic Portfolio Planning," Financial Analysts Journal, May-June 1984, p.14-26.

***Lecture Series VI: Performance Evaluation***

BKM, Chapter 24.

***Lecture Series VII: Market Efficiency and Return Predictability***

BKM, Chapters 11 and 12.

***Lecture Series VIII: Options and Time-Varying Volatility***

BKM, Chapters 20 and 21.

Robert Engle, "Risk and Volatility: Econometric Models and Financial Practice," American Economic Review, 2004, Vol.94, No.3, pp.405-420.

***Lecture Series IX: Futures***

BKM, Chapters 22 and 23.

***Lecture Series X: Bonds and the Term Structure of Interest Rates***

BKM, Chapters 14, 15 and 16.