

UNIVERSITY OF PENNSYLVANIA
The Wharton School

Investments
Professor Stambaugh

Course Syllabus
Fall 2001

Course Description

The objective of this course is to undertake a rigorous study of theory and empirical evidence relevant to investment management. Topics covered include (1) the behavior of security prices, (2) objectives for short-term and long-term investing, (3) diversification, (4) constructing optimal portfolios, (5) modeling and estimating risk-reward tradeoffs, (6) active vs. passive strategies, and (7) evaluating the performance of managed portfolios. Much of the course is devoted to common stocks, but other investments, especially fixed-income securities, will be included. The course does not cover individual security selection and valuation (i.e., this is not a course on “equity research” or stock picking).

The course is applied in an important sense, in that various concepts and approaches are subjected to real-world data. On the other hand, the course devotes less time to the institutional aspects of investment management and is fairly quantitative. Rather than describe the operational details of current practice, the course attempts to provide a lasting conceptual framework in which to view the investment process and to analyze future ideas and changes in the investment environment.

The prerequisites are Fin 601 and Stat 621 (MBA students) or Fin 102 and Stat 101 (undergraduates). Given that investment management requires one to understand and deal effectively with randomness, a good grounding in statistics is essential, and familiarity with statistics should extend through multiple regression, covariance, and correlation.

Purchases

1. *Investments*, by Zvi Bodie, Alex Kane, and Alan J. Marcus (Fifth Edition), McGraw-Hill.
2. *Solutions Manual* for use with *Investments* (recommended, since homework assignments will often include text problems).
3. Coursepack available from Wharton Reprographics.

Exams and Grading

The course grade will be based on a midterm exam (30%), a final exam (42%), and four projects (28%). Class participation and homework preparedness will help decide grades at the margin. The exams will be given at the dates and times shown below.

Midterm Exam: Wednesday, October 17, 6:00–7:30 PM, room to be announced

Final Exam: Friday, December 14, 4:00–6:00 PM, room to be announced

The final exam will concentrate primarily on topics covered after the midterm, but since many of those topics build on first-half material, you should view the final exam as requiring a cumulative knowledge of the entire course. The exams will be closed-book, but you may bring one 8 1/2 by 11 sheet of paper containing formulas to the midterm and two 8 1/2 by 11 sheets to the final (and the sheets may contain formulas on both sides). You should also bring a calculator that has log and exponential functions and can raise a number to a power (devices with spreadsheet or word-processing capabilities are not permitted in the exam). ***Copies of previous midterms and finals (with answers) are included at the end of the coursepack.***

Projects

The projects are intended to give some hands-on familiarity with investments data and to provide some experience and insight into applying quantitative techniques useful in investment analysis. The projects will require computations that can be performed on a PC using Excel (including the Analysis Tool Pack and the Solver Add-In) or other statistical analysis programs.

Students may work on each project individually or in teams of up to three members. Only one project report should be submitted per team, but *the names of all team members should appear clearly on the front page of the report.* All team members will receive the same project grade, which is assigned as "check-plus," "check," "check-minus," or "no credit." The project report should be a self-contained write-up of the results and conclusions, limited to three double-spaced pages. Additional tables or exhibits may be included (but no listings of data). The project assignments will be distributed in class two to three weeks before each due date. Due dates are as follows:

Project 1: September 24

Project 2: October 10

Project 3: November 14

Project 4: December 10

Review Sessions

Four review sessions will be held during the semester. These sessions, to which attendance is optional, are intended to answer questions about homework problems or other issues that students did not get a chance to ask during regular class meetings. The review sessions are scheduled at 4:30 on the following dates:

October 2

October 16

November 16

December 13

Rooms will be announced later.

Office Hours

I welcome students to see me outside of class to discuss any aspect of the course. My scheduled office hours, when students may come without appointments, are Wednesday from 4:30 to 5:30 (after my last class) and Thursday from 2:00 to 3:00. You may also see me before or after class to make an appointment for another time. My office is at 3251 SH-DH, my extension is 8-5734, and my e-mail address is stambaugh@wharton.

Teaching Assistants

The TA's for the course are Lily Fang and Richard Evans, who are Ph.D. students in finance. Lily's office is in SH-DH 2362, her extension is 8-, her e-mail address is lifang@wharton, and her office hours are on Tuesdays from 4:00 to 5:30. Richard's office is in SH-DH 2360, his extension is 8-7542, his e-mail address is evansr@wharton, and his office hours are Thursdays from 12:00 to 1:30.

Class Handouts

Lecture notes and other handouts will be distributed during most class meetings. Through an arrangement with Wharton Reprographics, the cost of these handouts will be added to each student's bursar bill at the end of the term. Students will be charged for the actual number of pages distributed, which is estimated to be approximately 200 pages per student. Students who miss class are responsible for obtaining copies of material distributed in class, including project assignments. It is recommended that prior arrangements be made to have another student pick up handouts for a class to be missed. In general, handouts are not available prior to class. I will maintain a web page for the course, where most of the material I hand out will be available for download after class. The address for the page is

<http://finance.wharton.upenn.edu/~stambaug/class/>

The username and password are supplied to students in class.

Reading Assignments

You should bring the assigned readings to class, especially those from the coursepack, since I will often display and refer to tables or figures from the readings but will not distribute additional copies. The schedule of class meetings attached below assigns readings from the text and the coursepack that are relevant to each day's lecture. It is best to do the assigned readings prior to class. I will try to alert you to instances where prior reading is essential, such as when problems are assigned for class discussion.

CLASS SCHEDULE - FALL 2001

Date	Topics	Assigned Readings ¹
Sept. 10	Overview/Review; risk and return; Value at Risk (VaR)	BKM chapters 1, 2, 3, 5, and 18, section 24.1, 26.1, and appendix A.
Sept. 12	Volatility and diversification; fluctuations in volatility	BKM sections 6.2, 8.1, and 13.4, appendices A and B to chapter 8; Whaley (1)
Sept. 17	Asset allocation: combining cash and a risky portfolio; stock index futures	BKM section 6.1, chapter 7, sections 22.1–22.4, and pp. 773-780.
Sept. 19	Portfolio opportunities and choices; Modern Portfolio Theory	BKM sections 8.2, 8.4, and 8.6
Sept. 24	Market valuation and prediction	BKM pp. 357-9, 402-5, and sections 27.1–27.3; Phillips (2); Lee and Swaminathan (3); Siegel (4); Sharpe (5)
Sept. 26	Portfolio optimization; effects of constraints	BKM sections 8.5 and 26.2–26.3; Kritzman (6);
Oct. 1	The CAPM; index funds	BKM chapter 9, pp. 198 and 349-50, section 13.1; Vertin (8); “Pension Funds Think...” (9)
Oct. 3	Estimating market sensitivity (beta); index models; market-neutral funds	BKM sections 10.1–10.3, pp. 781–2; Grundy and Malkiel (10); Jacobs and Levy (11); Hansell (12)
Oct. 8	Using equilibrium pricing theory for portfolio optimization: the Black-Litterman model	Black and Litterman (13)
Oct. 10	Multifactor models	BKM section 10.4, chapter 11, and section 13.2; Connor (14); Roll and Ross (15); Clark (16)
Oct. 15	Interest-rate risk	BKM chapters 14 and 16, pp. 782-4.
Oct. 17	MIDTERM EXAM, 6:00-7:30 PM (no class during day)	
Oct. 22	Long-horizon investing and shortfall risk	BKM pp. 149–151, 175-7, 254-6; Leibowitz and Langetieg (17); Butler and Domain (18); Kritzman (19 & 20); Rubinstein (21)

¹ BKM denotes the textbook; coursepack item numbers appear in parentheses

Date	Topics	Assigned Readings¹
Oct. 24	Testing pricing theories; small-cap versus large-cap; economic issues; data mining	BKM pp. 359–367, sections 13.1, 13.3; Berk (22); McQueen and Thorley (23)
Oct. 29	Trading costs; implementation of small-cap strategies	Loeb (24); Siquefield (25); Bodurtha and Quinn (26); Keim and Madhavan (27)
Oct. 31	Performance evaluation; performance attribution	BKM chapter 24; Brinson, Singer, and Beebower (28), Ibbotson and Kaplan (29)
Nov. 5	Growth versus value; risk versus sentiment	Atlas (30); Capaul, Rowley, and Sharpe (31); Daniel and Titman (32); Davis, Fama, and French (33); Asness et al. (34)
Nov. 7	Guest speaker: Mark Carhart, Goldman Sachs Asset Management Note special time: 4:30 – 6:00 PM (room to be announced)	
Nov. 12	Momentum strategies; behavioral issues	Chan, Jegadeesh, and Lakonishok (35); Daniel and Titman (36); Barber and Odean (37)
Nov. 14	Pension-fund shortfall and investment policy	BKM sections 20.4 and 26.5; Bodie (38)
Nov. 19	Mutual fund ratings and style analysis	BKM chapter 4, pp. 368–374; Morey (39); Blume (40)
Nov 21	no class (day before Thanksgiving)	
Nov. 26	Mutual fund performance: historical evidence	Carhart (41); Wermers (42)
Nov. 28	Delta hedging; rebalancing; concave vs. convex strategies	BKM sections 20.1–20.3 and 21.4 and pp. 718-724; Perold and Sharpe (43)
Dec. 3	Hedge funds	Jorion (7); Fung and Hsieh (44); Asness, Krail, and Liew (45)
Dec. 5	Guest speaker: Gary Haubold, Edge Capital Management Note special time: 4:30 – 6:00 PM (room to be announced)	
Dec. 10	Issues in international investing	BKM chapter 25; Solnik (46); Asness, Liew, and Stevens (47); Rouwenhorst (48)