Course Description

The objective of this course is to undertake a rigorous study of the theoretical foundations of modern financial economics. The course will cover the central themes of modern finance including individual investment decisions under uncertainty, stochastic dominance, mean-variance theory, capital market equilibrium and asset valuation, arbitrage pricing theory, option pricing and the potential application of these themes. Upon completion of this course, students should acquire a clear understanding of the major theoretical results concerning individuals’ consumption and portfolio decisions under uncertainty and their implications for the valuations of securities.

Prerequisites

The prerequisites for this course are graduate level microeconomics (Economics 681 or Economics 701), matrix algebra, and calculus. The microeconomics courses may be taken concurrently.

Course Material

- The website for the course is:
  https://webcafe.wharton.upenn.edu/eRoom/fnce/911-fa10-1.
  Wharton students enrolled in the course have automatic access. Non-Wharton students enrolled in the course should see:
  for information on obtaining a Wharton computing account.

- The textbook for the course is:
  On the syllabus, readings from the textbook are prefaced by HL. This textbook is out of print. Copies of the relevant chapters can be accessed through the course website.
• Following each topic, there is a list of recommended articles. These can also be accessed through the website.

Other reading

Some excellent texts that cover material related to this course are:


For background reading, the following textbooks may be useful:


Course Work and Grading

Homework assignments will be handed out on Wednesdays starting the second week of classes and will be due in class the following Wednesday. While you may work on the homework in groups, you must hand in your own answers. Homework assignments will be graded on a three point scale. There will be a closed-book final during the final exam period. The date and time, as determined by the Registrar, is December 16, 3:00–5:00 PM.

Students are expected to come to class and to actively participate in class discussion. Final grades will be determined by 20% homework and 80% final exam. Class participation will count for students on the margin between grades.

Teaching Assistant

The teaching assistant for this course is Dieter Vanwalleghem. He can be reached by email at dieter@wharton.upenn.edu.
Course Outline and Readings

Note: Dates are approximate.

I Decision Making under Uncertainty Sept. 8, 13, 15.

- Outline
  - Expected utility representations
  - Risk aversion
  - Insurance premium; certainty equivalent wealth
  - Portfolio choice
  - Important utility functions
  - Global risk aversion

- Readings:
  (a) HL Chapter 1

II Stochastic Dominance Sept. 20.

- Outline
  - Motivation
  - First order stochastic dominance
  - Second order stochastic dominance
  - A definition of risk; mean-preserving spreads

- Readings
  (a) HL Chapters 2.1–2.10
III Mean-Variance Portfolio Analysis Sept. 22, 27, 29.

- Outline
  - Notation and definitions
  - Characterization of minimum variance portfolios
  - Properties of minimum variance portfolios
  - The case with a riskless asset

- Readings
  (a) Chapter 3

IV Portfolio Separation and the Capital Asset Pricing Model (CAPM) Oct. 4, 6, 13. (Note: No class on Oct. 11.)

- Outline
  - Statement of the CAPM
  - First derivation of the CAPM
  - One and two-fund separation
  - Second derivation of the CAPM

- Readings
  (a) HL Chapters 4.1–4.17
V Arbitrage Pricing Theory Oct. 18.

• Outline
  – Linear factor model
  – An economy with 1 factor and no residual risk
  – An economy with $K$ factors and no residual risk
  – An economy with $K$ factors and residual risk

• Readings
  (a) HL Chapters 4.18–4.22


• Outline
  – Pareto-optimal allocations
  – Complete markets economy and competitive equilibrium
  – Securities market equilibrium
  – Using options to complete markets
  – Representative agent
  – Aggregation

• Readings
  (a) HL Chapter 5
VII State Prices and Arbitrage Nov. 1.

- Outline
  - Definitions
  - Fundamental theorem of asset pricing
  - Complete markets
  - Application to options
- Readings
  (a) HL Chapters 6.1–6.9

VIII Multi-Period Securities Markets Nov. 3, 8.

- Outline
  - Description of the economy
  - Pareto optimal allocations
  - Complete markets competitive equilibrium
  - Dynamic completeness
  - Securities market equilibrium
- Readings
  (a) HL Chapters 7.1–7.8, 7.11-7.15
IX Characterizing Optimal Consumption and Investment Policies: Dynamic Programming

Nov. 10, 15, 17, 22. (Note: No class on Nov. 24.)

- Outline
  - Dynamic programming
  - Characterization of optimal consumption and investment policies
  - Representative agent revisited
  - Consumption CAPM
  - Extensions to non-expected utility

- Readings
  (a) HL Chapters 7.9, 7.10, 7.16, 7.19, 7.20, 7.22

- Outline
  - Notation and definitions
  - Martingale property of prices and no-arbitrage
  - Market completeness
  - Individual optimization
  - Asset pricing: Binomial model

- Readings
  (a) HL Chapter 8