Princeton University

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***Office:* 205 Dial Lodge**
***Office Hours:* W. 11:00-12:20 p.m.**

Fin 501: Asset Pricing
http://courseinfo.princeton.edu
***Room:* 103 BCF (Dial Lodge)**
***Times:* MW, 9:30 – 10:50 p.m.**
Fall 2004

FIN 501: Asset Pricing I
Pricing Models and Derivatives

Course Description:
The aim of this course is to introduce students to the modern theory of asset pricing, portfolio theory and derivatives pricing. Topics covered include (i) no-arbitrage, Arrow-Debreu prices, and equivalent martingale measures, (ii) security structure and market completeness, (iii) mean-variance analysis, Beta pricing, CAPM, and (iv) derivatives pricing. The course is designed for Master students, but is also open to undergraduate and Ph.D. students.

Textbooks:
The first part of the course will (partially) follow the textbook by

> Stephen F. LeRoy and Jan Werner [*L*], (2001), *"Principles of Financial Economics"*, Cambridge University Press.

A less technical introduction is also provided by

> Danthine and Donaldson [*D*], (2001), *"Intermediate Financial Theory"*, Prentice Hall (optional).

The second part of the course provides an introduction to derivative pricing and is based on

> Robert L. McDonald [McD], (2002), *"Derivatives Markets"*, Addison Wesley.
> John C. Hull [*H*], (2002), *"Options, Futures and Other Derivatives"*, 5th edition, Prentice Hall (optional).

The following book is useful for both parts of the course, but puts more emphasis on dynamic modeling.

> Jakša Cvitanić and Fernando Zapatero [CZ], (2004), *"Introduction to the Economics and Mathematics of Financial Markets"*, MIT Press (optional).

Structure of the Course:

Part I: Asset Pricing Models

1. Role of Financial Markets – Empirical Regularities
2. One-period Models [*L*3]
   - Security structure and Market
   - LOOP, No Arbitrage
   - The three Pricing Formulas:
     Arrow-Debreu (State) Prices/Stochastic Discount Factor/Martingale Pricing
   - Optimality, Representative Agent Analysis
3. Expected Utility, Risk Preferences and Portfolio Choice [*L*8,9,11,12]
4. Equilibrium: Equity Premium Puzzle, Sharp Ratio Bounds [*L*14.4]
5. State-price Beta Model
6. Mean Variance Analysis, Beta-Pricing, CAPM
   [*L*17-19], [*D*4, 5.2-5.5, 6, CZ5.1,13.1-13.2]
7. Factor Pricing Models (APT, FF) [*L*20, CZ14]
8. Multi-period Models [*L*21-28]
   - Conditional versus Unconditional Betas
   - Dynamic Market Completeness
   - Risk Neutral Valuation
   - Hedging Demand
9. Market Efficiency

Part II: Derivative Pricing

10. Forward, Futures and Swaps [*H*1-6,*McD*1-8, CZ1-2]
11. Options [*H*7-9,*McD*9]
12. Stock price models and Black Scholes Formula
    - Binomial trees [*H*10,*McD*10-13]
    - Black-Scholes model [*H*12,13,*McD*18,20,21]

Precepts:

The purpose of precepts is to deepen your understanding of the course material and to go over problem sets. Most likely they will be held in the same classroom (BCF 103) on Thursdays from 10:30 a.m. to 11:50 a.m. whenever problem sets are due or prior to exams. If you have questions about the course, you can e-mail Gustav (our preceptor). He will then discuss them among all students during the precepts to guarantee that all students are treated equally.

Preceptor:

For questions about the course material and in particular about the problem sets, please contact:

Gustav Sigurdsson
e-mail: gsigurds@princeton.edu
Office hours: Tuesdays 10:30 a.m. – 12:00 p.m.

Office hours will be held in the Bendheim Center conference room (next to the lounge on the ground floor).

Course material:

Additional course material (if necessary) will be made available on the course website <http://www.princeton.edu/~markus/teaching/Fin501/Teaching_Fin501.htm> after classes. All students who are registered for this class will have access to this site. Please make use of the **bulletin board** feature of the Princeton's blackboard course website to initiate discussions and answer your fellow students' questions. Please use the bulletin board responsibly and keep in mind that the accuracy of the answers is not guaranteed.

Grading:

The overall grade is the higher of two possible weighting schemes:

Problem Sets:	20 %	0.0 %
Midterm test:	30 %	37.5 %
Final examination:	50 %	62.5 %

That is, the grades for the problem sets can only improve the overall grade. The midterm test will be held on Thursday Oct 23rd in class (subject to change). The final will be held in January 2004. Problem sets will be graded in steps of 10 %. Late submission reduces the grade by 10 % per day.

Although the exams are closed book, you may bring into the exam one 8 ½ x 11 sheet of paper. You can write on both sides and as small as you wish, but I recommend using this only as a psychological support to have a formula available "just in case." The exams won't be "fill in the blanks" exercises, nor will they rely on intensive formula-based computations. Preparing lots of pre-fabricated solutions from previous exams or assignments will only be distracting during the exam.

You will be allowed to use a silent battery operated calculator during the exams. Laptops, while useful for assignments, are not needed (nor allowed) in my exams.

Since the preceptor will grade all assignments and exams, all appeals of grades should first be addressed to the preceptor. Verbal appeals of grades will not be accepted. We will be glad to regrade any assignment or exam. However, you must provide a statement in writing as to where and why there is a problem. Importantly, the entire exam or assignment will be regraded. As a result, the regarded score may increase, remain the same, or decrease. Exams or assignments written with pencil cannot be regraded.

Undergraduate students who wish to take this course will be graded according to the same standards as Masters and Ph.D. students.