

IOWA STATE UNIVERSITY – DEPARTMENT OF ECONOMICS

ECON 653: FINANCIAL ECONOMICS

COURSE ADMINISTRATION

Term: Fall 2009

Class Meetings: TR 12:40-1:55 in 111 East Hall

Instructor: Professor Sergio H. Lence
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Email: shlence@iastate.edu Website: <http://www.econ.iastate.edu/faculty/lence/>
Office hours: TR 2:30-3:30, MWF 1:30-2:30, or by appointment with secretary (Terry Dannatt, 460 Heady Hall, 294-7318, tdannatt@iastate.edu)

Department: Economics, 266 Heady Hall Website: <http://www.econ.iastate.edu/>
GianCarlo Moschini, Chair Phone: 294-5761

Prerequisites: Econ 603 and Econ 672; Fin 520, Stat 551, and Econ 674 recommended.

Course Description:

This is a first course in financial economics for PhD students. It consists of a systematic study of the main contemporary theories of asset pricing and decision-making under uncertainty, and a review of the corresponding (both positive and normative) applications.

Course Objectives:

Upon successful completion of this course, students should:

1. Know and understand the main contemporary theories of asset pricing and decision-making under uncertainty.
2. Know, understand, and be able to use the most popular positive and normative applications of contemporary theories of asset pricing and decision-making under uncertainty.
3. Be able to conduct independent research on issues related to asset pricing and decision-making under uncertainty.

Textbooks:

The required textbook is:

Pennacchi, G. 2007. *Theory of Asset Pricing*. Boston: Pearson.

The textbook will be followed relatively closely because this is a first course in financial economics and there are many topics to be addressed; therefore, having a source unifying coverage is helpful. However, supplemental readings will be assigned as necessary, especially to cover empirical topics. Selected readings will be either handed out or put on reserve at 2 Parks Library; many of the readings will be from the following recommended textbooks:

- Björk, T. 2004. *Arbitrage Theory in Continuous Time, 2nd Edition*. New York: Oxford University Press.
Campbell, J. Y., A. W. Lo, and A. C. MacKinlay. 1997. *The Econometrics of Financial Markets*. Princeton, NJ: Princeton University Press.
Cochrane, J. H. 2005. *Asset Pricing, Revised Edition*. Princeton, NJ: Princeton University Press.
Eichberger, J, and I. R. Harper. 1997. *Financial Economics*. New York: Oxford University Press.
Gollier, C. 2001. *The Economics of Risk and Time*. Cambridge, MA: MIT Press.
Huang, C., and R. H. Litzenberger. 1988. *Foundations for Financial Economics*. Englewood Cliffs, NJ: Prentice-Hall.

- Hull, J. C. 2005. *Options, Futures and Other Derivatives, 6th Edition*. Upper Saddle River, NJ : Prentice Hall.
- Ingersoll, J. E. 1987. *Theory of Financial Decision Making*. Savage, MD: Rowman & Littlefield Publishers.
- Joshi, M. S. 2003. *The Concepts and Practice of Mathematical Finance*. New York: Cambridge University Press.
- LeRoy, S. F., and J. Werner. 2001. *Principles of Financial Economics*. New York: Cambridge University Press.
- Neftci, S. N. 2000. *An Introduction to the Mathematics of Financial Derivatives, 2nd Edition*. San Diego: Academic Press.

Students in need of less technical and/or more intuitive explanations of some of the models discussed in class are referred to the following textbooks:

- Danthine, J.-P. and J. Donaldson. 2005. *Intermediate Financial Theory, 2nd Edition*. New York: Academic Press.
- Luenberger, D. G. 1998. *Investment Science*. New York: Oxford University Press.
- Sharpe, W. F. 2000. *Portfolio Theory and Capital Markets*. New York: McGraw-Hill.

Grading:

The final grade will be based on the student's "weighted average score" at the end of the course. The "weighted average score" will be calculated as follows:

Term Paper (Due: 4/15/2010)	30%
Homework Assignments and Class Participation	15%
$\max(0.5 M + 0.5 F, 0.3 M + 0.7 F)$	55%

where $M \equiv$ Midterm Exam (10/20/2009) and $F \equiv$ Final Exam. Homework assignments may be done in groups, but they are to be written individually. Homework assignments handed in late will be discounted 10% of the full grade per each day late if turned in before the graded assignment is returned to students, and will receive zero points otherwise.

Term Paper:

The term paper consists of a written report of the results from an independent study of some topic related to the issues discussed in class. Such independent study may consist of, e.g., an econometric analysis of a new data set, a thorough literature review, a thorough replication of the empirical results shown in an article published in a leading journal, or a novel application of a theoretical model. Students must seek and obtain approval from the instructor for their chosen topic before pursuing their study. Without such approval, students will receive zero points on the term-paper assignment.

Other Course Policies or Procedures:

1. Relevant materials and news will be posted on the Internet at the Econ 653 website (<http://www.econ.iastate.edu/classes/econ653/lence/>). This should be the primary source of course information.
2. Regular class attendance is expected. Absences will reduce grades under the "Class Participation" category. In addition to regular class attendance, the grade for "Class Participation" involves asking and answering questions in class, and participating in class discussions.
3. Make-up exams will be given only under extenuating circumstances and if advance arrangements are made with the instructor.
4. Students who disagree with their grades will have the corresponding assignment(s) reevaluated only if they give the instructor a written justification for their request.
5. Acts of academic dishonesty will be penalized with a final grade of "F" for the course. In addition, university rules regarding academic dishonesty will be strictly enforced.
6. Students who have a documented disability that requires assistance should contact the Disability Resources Office (DRO) at 1076 Student Services Building. The DRO can also be contacted by phone (515-294-6624, TDD 515-294-6335) or email (awoniyib@iastate.edu).

COURSE TOPICS

I. THEORY

1. Single-Period Consumption, Portfolio Choice, and Asset Pricing
 - 1.1. Expected Utility and Risk Aversion
 - 1.2. Mean-Variance Analysis
 - 1.3. Capital Asset Pricing Model (CAPM), Arbitrage, and Linear Factor Models
 - 1.4. Consumption-Savings and Asset Pricing
2. Multi-Period Consumption, Portfolio Choice, and Asset Pricing
 - 2.1. Multi-Period Discrete-Time Models of Consumption and Portfolio Choice
 - 2.2. Multi-Period Market Equilibrium
3. Pricing of Contingent Claims
 - 3.1. Basics of Derivative Pricing – Binomial Model
 - 3.2. Essentials of Diffusion Processes and Itô's Lemma
 - 3.3. Dynamic Hedging and Equilibrium Partial Differential Equations
 - 3.4. Arbitrage, Martingales, and Pricing Kernels
 - 3.5. Jump Processes
4. Multi-Period Models In Continuous Time and with Non-Standard Utility Functions
 - 4.1. Continuous Time Consumption and Portfolio Choice
 - 4.2. Asset Pricing in Continuous Time
 - 4.3. Time-Inseparable Utility
 - 4.4. Behavioral Finance and Asset Pricing
5. Valuation Under Asymmetric Information
 - 5.1. Equilibrium with Private Information
 - 5.2. Asymmetric Information, Trading, and Markets
6. Bond Pricing
 - 6.1. Models of the Term Structure of Interest Rates
 - 6.2. Models of Credit Risk

II. APPLICATIONS

1. Mean-Variance Portfolio Optimization
2. Tests of Asset Pricing Models
 - 2.1. Tests of the CAPM
 - 2.2. Tests of Factor Pricing Models
3. Other Tests
 - 3.1. Tests of Intertemporal Equilibrium Models
 - 3.2. Tests of Risk Sharing
 - 3.3. Tests of Predictability of Asset Returns
4. Calibration of Option Pricing Formulas
5. Miscellanea
 - 5.1. Event Study Analysis
 - 5.2. Data-snooping

COURSE TOPICS AND SELECTED READINGS

(Note: Complete book citations are provided in the "Reference" section. Starred (*) readings are required readings.)

1. Single-Period Consumption, Portfolio Choice, and Asset Pricing
 - 1.1. Expected Utility and Risk Aversion
 - *Eichberger and Harper; Chapter 1.
 - Hirshleifer and Riley; Chapters 1, 2, and 3.
 - Huang and Litzenberger; Chapter 1.
 - Ingersoll; Chapters 1 and 3.
 - Laffont; Chapters 1 and 2.
 - LeRoy and Werner; Chapters 8, 9, and 10.
 - *Machina, M. J. 1987. "Choice Under Uncertainty: Problems Solved and Unsolved." *Journal of Economic Perspectives* 1:121-54.
 - Mas-Colell, Whinston, and Green; Chapter 6.
 - Pratt, J. W. 1964. "Risk Aversion in the Small and in the Large." *Econometrica* 32:122-36.
 - *Pennacchi; Chapter 1.
 - *Rabin, M. 2000. "Risk Aversion and Expected-Utility Theory: A Calibration Theorem." *Econometrica* 68:1281-92.
 - 1.2. Mean-Variance Analysis
 - Anderson, R., and J.P. Danthine. 1981. "Cross Hedging." *Journal of Political Economy* 89:1182-96.
 - *Canner, N., N. G. Mankiw, and D. N. Weil. 1997. "An Asset Allocation Puzzle." *American Economic Review* 87:181-91.
 - Cochrane; Chapter 5.
 - *Eichberger and Harper; Chapter 2.
 - Hirshleifer and Riley; Chapter 2.3.
 - Huang and Litzenberger; Chapter 3.
 - *Ingersoll; Chapter 4.
 - LeRoy and Werner; Chapters 17 and 18.
 - Markowitz; Chapters 7, 8, and 13.
 - *Pennacchi; Chapter 2.
 - 1.3. Capital Asset Pricing Model (CAPM), Arbitrage, and Linear Factor Models
 - *Campbell, Lo, and MacKinlay; Chapters 5 and 6.
 - *Cochrane; Chapters 12 and 20.2.
 - Eichberger and Harper; Chapter 2.
 - Hirshleifer and Riley; Chapter 4.3.
 - Huang and Litzenberger; Chapter 4.
 - *Ingersoll; Chapters 4 and 7.
 - LeRoy and Werner; Chapters 19 and 20.
 - Lintner, J. 1965. "The Valuation of Risky Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets." *Review of Economics and Statistics* 47:13-37.
 - *Pennacchi; Chapter 3.
 - Mossin, J. 1966. "Equilibrium in a Capital Asset Market." *Econometrica* 34:768-83.
 - Roll, R. 1977. "A Critique of the Asset Pricing Theory's Tests Part I: On Past and Potential Testability of the Theory." *Journal of Financial Economics* 4:129-76.
 - Ross, S. A. 1976. "The Arbitrage Theory of Capital Asset Pricing." *Journal of Economic Theory* 13:341-60.
 - Sharpe, W. F. 1964. "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk." *Journal of Finance* 19:425-42.

- 1.4. Consumption-Savings and Asset Pricing
 - *Campbell, Lo, and MacKinlay; Chapters 8.1 and 8.2.
 - *Cochrane; Chapters 1.1-1.4, 2, 3, and 4.1-4.2.
 - Eichberger and Harper; Chapter 3.
 - Huang and Litzenberger; Chapter 5.
 - Ingersoll; Chapters 2, 3, and 8.
 - LeRoy and Werner; Chapters 6, 12, 13, and 14.
 - *Pennacchi; Chapter 4.

2. Multi-Period Consumption, Portfolio Choice, and Asset Pricing
 - 2.1. Multi-Period Discrete-Time Models of Consumption and Portfolio Choice
 - Cochrane; Chapter 9.1.
 - *Hall, R. E. 1978. "Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence." *Journal of Political Economy* 86:971-87.
 - Ingersoll; Chapter 11.
 - *Pennacchi; Chapter 5.

 - 2.2. Multi-Period Market Equilibrium
 - *Cochrane, J. H. 1991. "A Simple Test of Consumption Insurance." *Journal of Political Economy* 99:957-976.
 - *Cochrane; Chapters 10 and 11.
 - Hansen, L. P., and K. J. Singleton. 1982. "Generalized Instrumental Variables Estimation of Nonlinear Rational Expectations Models." *Econometrica* 50:1269-88.
 - _____. 1984. "Errata." *Econometrica* 52:267-68.
 - Lucas, R. E. 1978. "Asset Prices in an Exchange Economy." *Econometrica* 46:1429-46.
 - *Mace, B. J. 1991. "Full Insurance in the Presence of Aggregate Uncertainty." *Journal of Political Economy* 99:928-56.
 - *Pennacchi; Chapter 6.
 - Townsend, R. M. 1995. "Consumption Insurance: An Evaluation of Risk-Bearing Systems in Low-Income Economies." *Journal of Economic Perspectives* 9:83-102.

3. Pricing of Contingent Claims
 - 3.1. Basics of Derivative Pricing – Binomial Model
 - *Cochrane; Chapter 17.1.
 - Cox, J., S. Ross, and M. Rubinstein. 1979. "Option Pricing: A Simplified Approach." *Journal of Financial Economics* 7:229-63.
 - Hull; Chapters 1, 8, 9, and 10.
 - Ingersoll; Chapter 14.
 - *Pennacchi; Chapter 7.

 - 3.2. Essentials of Diffusion Processes and Ito's Lemma
 - Björk; Chapters 3 and 4.
 - Ingersoll; Chapters 12 and 16.
 - *Neftci; Chapters 3, 5, 7, and 9.
 - *Pennacchi; Chapter 8.

 - 3.3. Dynamic Hedging and Equilibrium PDEs
 - Björk; Chapter 6.
 - Cochrane; Chapters 17 and 19.
 - Hull, Chapter 12.
 - Ingersoll; Chapter 14.
 - Neftci; Chapter 13.
 - *Pennacchi; Chapter 9.

- 3.4. Arbitrage, Martingales, and Pricing Kernels
 - Cochrane; Cochrane; Chapters 1.5 and 4.3.
 - Ingersoll; Chapter 15.
 - *Neftci; Chapters 14 and 15.
 - *Pennacchi; Chapter 10.
- 3.5. Jump Processes
 - *Neftci; Chapter 8.
 - *Pennacchi; Chapter 11.
4. Multi-Period Models in Continuous Time and with Non-Standard Utility Functions
 - 4.1. Continuous Time Consumption and Portfolio Choice
 - Ingersoll; Chapters 13 and 15.
 - Pennacchi; Chapter 12.
 - 4.2. Asset Pricing in Continuous Time
 - Breeden, D. T. 1979. "An Intertemporal Asset Pricing Model with Stochastic Consumption and Investment Opportunities." *Journal of Financial Economics* 7:265-96.
 - Cox, J. C., J. E. Ingersoll, and S. A. Ross. 1985. "An Intertemporal General Equilibrium Model of Asset Prices." *Econometrica* 53:363-84.
 - Merton, R. C. 1973. "An Intertemporal Capital Asset Pricing Model." *Econometrica* 41:867-87.
 - Pennacchi; Chapter 13.
 - 4.3. Time-Inseparable Utility
 - Campbell, J. Y, and J. H. Cochrane. 1999. "By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior." *Journal of Political Economy* 107:205-51.
 - Constantinides, G. 1990. "Habit Formation: A Resolution of the Equity Premium Puzzle." *Journal of Political Economy* 98:519-43.
 - Pennacchi; Chapter 14.
 - 4.4. Behavioral Finance and Asset Pricing
 - Barberis, N., M. Huang, and T. Santos. 2001. "Prospect Theory and Asset Prices." *Quarterly Journal of Economics* 116:1-53.
 - *Barberis, N., and R. Thaler. 2003. "A Survey of Behavioral Finance." In Constantinides, G., M. Harris, and R. Stulz, *Handbook of Behavioral Finance*, Volume 1B, Chapter 18, pp. 1053-1123. New York: Elsevier North Holland.
 - Kahneman, D., and R. H. Thaler. 2006. "Utility Maximization and Experienced Utility." *Journal of Economic Perspectives* 20(Winter):221-34.
 - *Lo, A. W. 2004. "The Adaptive Market Hypothesis." *Journal of Portfolio Management* 30 (Anniversary Issue):15-29.
 - Kogan, L., S. Ross, J. Wang, and M. Westerfield. 2006. "The Price Impact and Survival of Irrational Traders." *Journal of Finance* 61:195-229.
 - Pennacchi; Chapter 15.
 - Thaler, R., and S. Benartzi. 2004. "Save More Tomorrow: Using Behavioral Economics to Increase Employee Saving." *Journal of Political Economy* 112:S165-S189.
5. Valuation Under Asymmetric Information
 - 5.1. Equilibrium with Private Information
 - Grossman, S. 1976. "On the Efficiency of Competitive Stock Markets Where Traders Have Diverse Information." *Journal of Finance* 31:573-85.
 - *Pennacchi; Chapter 16.
 - O'Hara, M. 2003. "Presidential Address: Liquidity and Price Discovery." *Journal of Finance* 58:1335-54.

- 5.2. Asymmetric Information, Trading, and Markets
 Kyle, A. S. 1985. "Continuous Auctions and Insider Trading." *Econometrica* 53:1315-35.
 Pennacchi; Chapter 16.
6. Bond Pricing
- 6.1. Models of the Term Structure of Interest Rates
 Pennacchi; Chapter 17.
- 6.2. Models of Credit Risk
 Duffie, D., and K. J. Singleton. 1999. "Modeling Term Structures of Defaultable Bonds."
Review of Financial Studies 12:687-720.
 Ingersoll; Chapter 19.
 Merton, R. C. 1974. "On the Pricing of Corporate Debt: The Risk Structure of Interest Rates."
Journal of Finance 29:449-70.
 *Pennacchi; Chapter 18.

Review Articles:

- *Cochrane, J. H. 2008. "Financial Markets and the Real Economy." In Constantinides, G., M. Harris, and R. Stulz, *Handbook of the Equity Risk Premium*, Chapter 7, pp. 237-330. New York: Elsevier North Holland.
- *Sundaresan, S. M. 2000. "Continuous-Time Methods in Finance: A Review and an Assessment." *Journal of Finance* 40:1569-1622.

REFERENCES

- Björk, T. 2004. *Arbitrage Theory in Continuous Time, 2nd Edition*. New York: Oxford University Press.
- Cochrane, J. H. 2001. *Asset Pricing*. Princeton, NJ: Princeton University Press.
- Campbell, J. Y., A. W. Lo, and A. C. MacKinlay. 1997. *The Econometrics of Financial Markets*. Princeton, NJ: Princeton University Press.
- Cochrane, J. H. 2001. *Asset Pricing, Revised Edition*. Princeton, NJ: Princeton University Press.
- Eichberger, J., and I. R. Harper. 1997. *Financial Economics*. New York: Oxford University Press.
- Hirshleifer, J., and J. G. Riley. 1992. *The Analytics of Uncertainty and Information*. New York: Cambridge University Press.
- Huang, C., and R. H. Litzenberger. 1988. *Foundations for Financial Economics*. Englewood Cliffs, NJ: Prentice-Hall.
- Hull, J. C. 2005. *Options, Futures and Other Derivatives, 6th Edition*. Upper Saddle River, NJ : Prentice Hall.
- Ingersoll, J. E. 1987. *Theory of Financial Decision Making*. Savage, MD: Rowman & Littlefield Publishers.
- LeRoy, S. F., and J. Werner. 2001. *Principles of Financial Economics*. New York: Cambridge University Press.
- Markowitz, H. M. 1959. *Portfolio Selection: Efficient Diversification of Investments*. New Haven, CT: Yale University Press.
- Mas-Colell, A., M. D. Whinston, and J. R. Green. 1995. *Microeconomic Theory*. New York: Oxford University Press.
- Neftci, S. N. 2000. *An Introduction to the Mathematics of Financial Derivatives, 2nd Edition*. San Diego: Academic Press.
- Pennacchi, G. 2007. *Theory of Asset Pricing*. Boston: Pearson.