

**ECON 643: Financial Economics II, Winter 2011**  
**Department of Economics, Concordia University**

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**Course Webpage:** <http://alcor.concordia.ca/~gospodin/teaching/643/643.html>

**Recommended Readings:**

**(CLM)** J.Y. Campbell, A.W. Lo and A.C. MacKinlay (1997), *The Econometrics of Financial Markets*.  
**(H)** J.C. Hull (2006), *Options, Futures and Other Derivatives*, 6th edition.  
**(C)** J.H. Cochrane (2005), *Asset Pricing*.  
**(PC)** P. Christoffersen (2003), *Elements of Financial Risk Management*.

**Grading:** Assignments: 10%; Midterm Exam: 50%; Term Projects: 40%.

**Course Description**

This course covers asset pricing theory with an emphasis on continuous time models and some recent empirical methods in finance. The first part of the course provides an introduction to diffusion models and stochastic calculus, pricing of contingent securities and term structure of interest rates. The second part of the course focuses on some advanced topics in financial econometrics such as value at risk analysis, estimation of asset pricing models and continuous-time econometrics. Generalized method of moments, maximum likelihood and nonparametric estimation of diffusion processes, volatility and asset pricing models are also discussed.

The course requires some prior background in financial and econometric theory such as contingent claims markets, mean-variance analysis, probability theory and statistical inference. The homework assignments will contain both analytical and applied problems. The term projects (10-15 pages) will involve summary and replication of empirical results in some recent journal articles related to the topics covered in class.

**Topics and Readings**

1. Distributional Properties of Financial Asset Returns
  - (a) Definitions of Returns and Stylized Facts
    - Ch.1 in PC
  - (b) Measuring and Modeling Conditional Variance of Returns
    - Ch.2 in PC, Ch.17 in H
  - (c) Conditional Covariance and Correlation
    - Ch.3 in PC
  - (d) Modeling Non-Normality of Unconditional Distribution of Returns
    - Ch.4 (4.2 and 4.3) in PC
2. Continuous-Time Models, Derivative Pricing and Hedging

- (a) Diffusion Processes and Ito's Lemma
    - Ch.9 (Sec.1) in CLM, Ch.11 in H
  - (b) Introduction to Option Pricing and Derivation of the Black-Scholes Formula
    - Ch.9 (Sec.2) in CLM, Ch.12 in H
  - (c) Option Risk and Hedging
    - Ch.7 (7.2 and 7.4) in PC, Ch.14 in H
  - (d) Pricing Options with Continuous Dividends, Forward Contracts, Options on Futures, Currency Options
    - Ch.13 in H
  - (e) American and Real Options
    - Ch.28 in H
  - (f) Option Pricing with Stochastic Volatility and Jumps, Pricing Biases in Black-Scholes Model
    - Ch.6 in PC
  - (g) Bond and Interest Rate Derivative Pricing, Credit Risk
    - Ch.22, 23 and 26 in H, Ch.19 in C
  - (h) Modeling the Dynamics of Commodity Prices, Valuation of Commodity Contingent Claims and Hedging
3. Review of Estimation Methods: Linear Instrumental Variables, GMM, MLE and Quasi MLE, Non-parametric Estimation, Principal Components
    - Appendix in CLM, Ch.11 and 14 in C
  4. Asset Pricing: Linear Factor and Intertemporal Equilibrium Models, Volatility Bounds, Estimation
    - (a) Factor Pricing Models
      - Ch.5 and 6 in CLM, Ch. 9 in C
    - (b) Beta representation and discount factor form
      - Ch.12-15 in C
    - (c) Nonlinear asset pricing models
      - Ch.8 in CLM, Ch.21 in C
  5. Estimation of Volatility Models and Diffusion Processes of Interest Rates
    - Ch.12 in CLM