SIMON FRASER UNIVERSITY
Department of Economics

Econ 815 – FINANCIAL ECONOMICS I
Syllabus – Fall 2016

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COURSE OBJECTIVES AND PREREQUISITES

This course is the first of a two course sequence in financial economics. The goal is to survey a variety of topics in asset pricing theory. The follow-up course by Bertille Antoine (Econ 818), will then focus on empirical issues. Financial economics provides a great example of the interaction between theory and empirical evidence. The goal of this two-course sequence is to illustrate this.

We are going to discuss 9 key ideas in asset pricing theory; roughly one per week. Students will be asked to read the following 9 papers: (1) Arrow's (1964) model of dynamic spanning, (2) Sharpe's (1964) CAPM model, (3) Merton's (1969) dynamic partial equilibrium model of optimal consumption/portfolio decisions, (4) Black & Scholes' (1973) option pricing model, (5) Lucas's (1978) general equilibrium consumption-based CAPM model, (6) Harrison & Kreps' (1978) model of speculative trading with heterogeneous beliefs, (7) Harrison & Kreps' (1979) theory of risk-neutral pricing and equivalent martingale measures, (8) Grossman & Stiglitz' (1980) informational efficiency impossibility theorem , and (9) Tirole's (1982) No Trade theorem. Although these papers may appear to be a bit 'dated', they continue to exert a profound influence on modern financial theory and practice. If time permits, we will discuss some of these recent extensions.

Much of modern financial theory uses the tools of continuous-time stochastic processes and continuous-time dynamic optimization. The first couple weeks of the course will provide a 'crash course' tutorial on these methods.

COURSE EVALUATION

		Weight in Grade
Problem Sets	–	20%
Midterm exam **(Thursday, October 20)**	–	40%
Final exam **(To Be Decided)**	–	40%

COURSE MATERIALS

There is no required textbook for this course. Papers and notes will be posted on the website as we go along. For those seeking a good textbook treatment of modern asset pricing, I recommend John Cochrane's (2005) book, *Asset Pricing*, which is available at the bookstore and on reserve at the library.

COURSE OUTLINE AND READINGS

I. MATHEMATICAL BACKGROUND

Sept. 15 – **Introduction and Overview**
Cochrane text, Preface

Sept. 15 – **Stochastic Processes**
Dixit & Pindyck, Chpt. 3 (pgs. 59-71)
Key Terms & Concepts: *Sample Paths, Stationarity, Martingales, Binomial Tree, Filtration, Weak Convergence, Mean-Squared Convergence, Ito Integral, Wiener Process, Brownian Motion, Diffusion Process*

Sept. 22 – **Stochastic Calculus**
Dixit & Pindyck, Chpt. 3 (pgs. 79-81)
Cochrane (2013), "Continuous Time Summary/Review" (webpage)
Key Terms & Concepts: *Ito's Lemma, Stochastic Differential Equations, generator, Feynman-Kac Formula*

Sept. 22 – **Dynamic Programming**
Dixit & Pindyck, Chpt. 4 (pgs. 93-107)
Key Terms & Concepts: *Value Function, Hamilton-Jacobi-Bellman (HJB) Equation*

II. ASSET PRICING THEORY

Sept. 29 – **Financial Markets and Arrow-Debreu General Equilibrium**
Arrow (1964), "The Role of Securities in the Optimal Allocation of Risk-Bearing"
Athreya (2013, pgs. 208-13), "Time, Uncertainty, and the ADM Model"
Key Terms & Concepts: *Complete Markets, Contingent Claims, Arrow Securities*

Sept. 29 – **Dynamic Spanning**
Radner (1972), "Existence of Equilibrium of Plans, Prices, and Price Expectations"
Athreya (2013, pgs. 214-21), "The Radner Version of the ADM Economy"
Key Terms & Concepts: *Radner Equilibrium*

Oct. 6 – **Portfolio Theory**
Campbell (2003), "Lecture Notes" (pgs. 1-11)
Campbell (2000), "Diversification: A Bigger Free Lunch"
Key Terms & Concepts: *Diversification, Mean-Variance Efficiency, Systematic Risk*

Oct. 6 – **The CAPM**
Sharpe (1964), "Capital Asset Prices: A Theory of Mkt. Equil. under Conditions of Risk"
Luenberger (1998), "The Capital Asset Pricing Model"
Campbell (2003), "Lecture Notes" (pgs. 12-22)
Cochrane (1999), "Portfolio Advice for a Multifactor World"
Key Terms & Concepts: *The Market Portfolio, Beta, Sharpe Ratio, Capital Market Line*

Oct. 13 – **Dynamic Consumption/Portfolio Rules**
Merton (1969), "Lifetime Portfolio Selection Under Uncertainty: The Continuous-Time Cas
Key Terms & Concepts: *CRRA vs. CARA Utility*

Oct. 13 – **Applications and Extensions of the Merton Model**
Class Notes
Key Terms & Concepts: *Hedging, Learning*

Oct. 20 – **Midterm Exam**

Oct. 27 – **Derivative Securities**
Cochrane text, Chpt. 17 (pgs. 313-320)

Oct. 27 – **The Black-Scholes Formula**
Black & Scholes (1973), "The Pricing of Options and Corporate Liabilities"
Black (1989), "How We Came Up with the Option Formula"
Key Terms & Concepts: *Replicating Portfolio, Delta Hedging, No Arbitrage Pricing, Heat Equation, PDEs*

Nov. 3 – **The Consumption-Based CAPM Model**
Lucas (1978), "Asset Prices in an Exchange Economy"
Cochrane text, Chpt. 1 (pgs. 3-7, 25-30)
Key Terms & Concepts: *Euler Equation, Stochastic Discount Factor*

Nov. 3 – **Applications and Extensions of the Lucas Model**
Class Notes
Key Terms & Concepts: *The Equity Premium Puzzle, Hansen-Jagannathan Bounds*

Nov. 10 – **Heterogeneous Beliefs**
Harrison & Kreps (1978), "Speculative Investor Behavior..with Heterogeneous Expectations
Key Terms & Concepts: *Priors, Subjective Beliefs, Merging, Agreeing to Disagree, Resale Option*

Nov. 10 – **Applications of Heterogeneous Beliefs**
Scheinkman & Xiong (2003), "Overconfidence and Speculative Bubbles"
Kasa, Walker & Whiteman (2014), "Heterogeneous Beliefs & Tests of Present Value Models

Nov. 17 – **Equivalent Martingale Measures and Risk-Neutral Pricing**
Harrison & Kreps (1979), "Martingales and Arbitrage in Multiperiod Securities Markets"
Cochrane text, Chpt. 4 (pgs. 61-75)
Chpts. 14 & 15 from Neftci's (1996) book, *Mathematics of Financial Derivatives*
Key Terms & Concepts: *Self-Financing Portfolio, No Arbitrage, Absolute Continuity, Radon-Nikodym Derivative*
Girsanov Theorem, Martingale Representation Theorem, Martingale Method

Nov. 24 – **Information and the Grossman-Stiglitz Paradox**
Grossman & Stiglitz (1980), "On the Impossibility of Informationally Efficient Markets"

Dec. 1 – **Speculation, Common Knowledge, and No-Trade Theorems**
Tirole (1982), "On the Possibility of Speculation under Rational Expectations"
Key Terms & Concepts: *Common Priors, Aumann's Theorem, Liquidity Traders*