Econ-GA 2021 – FINANCIAL ECONOMICS I
Syllabus – Fall 2018

Prof. Kasa   Office Hours: Mon. 10-12
Office: 611, 19 W. 4th St.   Phone: 778-389-2127
email: kkasa@sfu.ca

COURSE OBJECTIVES

This is the first of a two course sequence in financial economics. It covers both the core theory, and a variety of selected topics. The follow-up course by Prof. Ludvigson (Econ 2023) will then focus on empirical issues. Financial economics provides a great example of the interplay between theory and empirical evidence. The goal of this two-course sequence is to illustrate this.

The course is divided into three parts. The first part focuses on basic concepts and mathematical methods. Much of modern financial economics uses the tools of continuous-time stochastic processes and continuous-time dynamic optimization. The course starts by providing a 'crash course' tutorial on these methods. The second part applies these methods to the core topics of individual portfolio choice and market equilibrium. We will also use these methods to scratch the surface of the huge literature on derivatives pricing. The Black-Scholes formula is derived, and solved using both PDE and risk-neutral pricing approaches. The last part of the course surveys a variety of selected topics, roughly one per week. We discuss models of learning, recursive preferences, ambiguity and model uncertainty, heterogeneous beliefs and speculative bubbles, and finally, financial intermediation and financial crises. It is quite possible this list will need to be pruned as we go along. Even if we make it through it, many interesting and important topics are omitted. For example, we will not have time to discuss the traditional topics of static mean-variance portfolio theory and the CAPM. Models of asymmetric information, strategic trading, and market microstructure must also be omitted.

COURSE EVALUATION

		Weight in Grade
Problem Sets	–	20%
Midterm exam **(Monday, November 5)**	–	40%
Final exam **(To Be Decided)**	–	40%

COURSE MATERIALS

There is no required textbook for this course. Most of the material will draw on lecture slides and from Prof. Borovicka's lecture notes, which are posted on the website. However, I do recommend that students supplement this material with a textbook that is best suited to their background and interests. I recommend Kerry Back's (2017), *Asset Pricing and Portfolio Choice Theory*, which is available at the bookstore. Those seeking more mathematical rigor should use Darrell Duffie's text, *Dynamic Asset Pricing Theory*. Cochrane's (2005) *Asset Pricing* is the clearest and best written book on the market. However, it is a bit dated at this point, and is more oriented toward empirical applications (e.g., it provides little background on continuous-time methods). Campbell's (2018) recent book, *Financial Decisions and Markets* is more up-to-date than Cochrane, but it also focuses on discrete-time models and empirical issues.

COURSE OUTLINE AND READINGS

I. BACKGROUND

Sept. 10   –   **Introduction and Overview**
Cochrane text, Preface and Chpt. 1 (pgs. 1-15) (class webpage)
Cochrane (2017), "Macro-Finance" (class webpage)
Shiller (2014), "Nobel Lecture: Speculative Asset Prices" (class webpage)

Sept. 17   –   **Arbitrage and Equilibrium in a 2-Period World**
Back, Chpts. 3 and 4
Varian (1987), "The Arbitrage Principle in Financial Economics" (class webpage)
Key Terms & Concepts: *State-Contingent Claims, Stochastic Discount Factors, Risk-Neutral Probabilities*

II. MATHEMATICAL TOOLS

Sept. 24   –   **Stochastic Processes and Stochastic Calculus**
Borovicka, Chpt.1 lecture slides (class webpage)
Dixit & Pindyck, Chpt. 3 (pgs. 59-71, 79-81) (class webpage)
Back, Chpt. 12
Cochrane (2013), "Continuous Time Summary/Review" (class webpage)
Key Terms & Concepts: *Sample Paths, Stationarity, Martingales, Binomial Tree, Weak Convergence, Mean-Squared Convergence, Brownian Motion, Ito Integral, Ito's Lemma, Diffusion Process, Girsanov's Theorem*

Oct. 1   –   **Dynamic Programming**
Back, Chpt. 9 (pgs. 208-226)
Dixit & Pindyck, Chpt. 4 (pgs. 93-107) (class webpage)
Key Terms & Concepts: *Value Function, Hamilton-Jacobi-Bellman (HJB) Equation*

Oct. 8   Fall Recess (no class)

III. BASIC ASSET PRICING THEORY

Oct. 15   –   **Dynamic Consumption/Portfolio Rules**
Merton (1969), "Lifetime Portfolio Selection Under Uncertainty:
                 The Continuous-Time Case" (class webpage)
Back, Chpt. 13 and Chpt. 14 (pgs. 342-357), Chpt. 15 (pgs. 387-390)
Key Terms & Concepts: *Martingale Method, Hedging, Verification Theorem*

Oct. 22   –   **The Consumption-Based CAPM**
Back, Chpt. 10 (pgs. 233-245), Chpt. 14 (pgs. 357-360)
Key Terms & Concepts: *Equity Premium Puzzle, Hansen-Jagannathan Bounds, Idiosyncratic Labor Income*

Oct. 29   –   **Derivatives and Option Pricing**
Back, Chpt. 16
Key Terms & Concepts: *Black-Scholes Formula, Replicating Portfolio, Delta Hedging, Feynman-Kac Formula*

Nov. 5   –   **Midterm Exam**

IV. SOME EXTENSIONS

Nov. 12   –   **Learning**
Borovicka, Learning and Filtering notes (class webpage)
Back, Chpt. 23
Pastor & Veronesi (2009), "Learning in Financial Markets" (class webpage)
Veronesi (1999), "Stock Market Overreaction to Bad News in Good Times" (class webpage)
Key Terms & Concepts: *Kalman Filter, Wonham Filter*

Nov. 19   –   **Recursive Preferences and Long-Run Risks**
Back, Chpt. 11 (pgs. 268-279)
Bansal & Yaron (2004), "Risks for the Long-Run" (class webpage)
Alvarez & Jermann (2005), "Using Asset Prices to Measure the Persistence of the
                          Marginal Utility of Wealth" (class webpage)
Epstein et. al. (2014), "How Much Would You Pay to Resolve Long-Run Risk" (webpage)
Borovicka & Hansen (2016), Term Structure of Uncertainty in the Macroeconomy (p. 1-30)
Key Terms & Concepts: *Aggregator, Intertemporal Resolution of Risk, Stochastic Differential Utility*

Nov. 26   –   **Ambiguity and Model Uncertainty**
Hansen & Sargent (2011), "Wanting Robustness in Macroeconomics" (class webpage)
Hansen, Sargent, Turmuhambetova, & Williams (2006), "Robust Control
                          & Model Misspecification" (class webpage)
Barillas, Hansen & Sargent (2009), "Doubts or Variability?" (class webpage)
Hansen & Sargent (2017), "The Price of Macroeconomic Uncertainty with Tenuous Beliefs"
Hansen & Miao (2018), "Aversion to Ambiguity and Model Misspecification in
                          Dynamic Stochastic Environments" (class webpage)
Key Terms & Concepts: *Ellsberg Paradox, Robust Control, Relative Entropy, Detection Error Probability*

 Dec. 3   –   **Heterogeneous Beliefs: Survival and Speculative Bubbles**
Back, Chpt. 21
Scheinkman & Xiong (2003), "Overconfidence and Speculative Bubbles" (class webpage)
Dumas, Kurshev & Uppal (2009), "Equilibrium Portfolio Strategies in the Presence of
                          Sentiment Risk and Excess Volatility" (class webpage)
Chan & Kohn (2011), "Asset Price Bubbles from Heterogeneous Beliefs About
                          Mean Reversion Rates" (class webpage)
Bhamra & Uppal (2014), "Asset Prices with Heterogeneity in Preferences and Beliefs"
Borovicka (2016), "Survival and Long-Run Dynamics with Heterogeneous
                          Beliefs under Recursive Preferences" (class webpage)
Key Terms & Concepts: *Priors, Subjective Beliefs, Merging, Agreeing to Disagree, Resale Option*

Dec. 10   –   **Financial Frictions and Financial Intermediation**
He & Krishnamurthy (2013), "Intermediary Asset Pricing" (class webpage)
Borovicka & Hansen (2016), Term Structure of Uncertainty in the Macroeconomy (p. 31-51)
Key Terms & Concepts: *Moral Hazard, Leverage, Capital Constraint, Marginal Investor*