SIMON FRASER UNIVERSITY
Department of Economics

Econ 808 – MACROECONOMIC THEORY
Syllabus – Fall 2006

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COURSE OBJECTIVES AND PREREQUISITES

This course provides an overview of most of the core topics in macroeconomics. The goal is to learn how to apply the workhorse models of modern macro: the Cass-Koopmans and Diamond optimal growth models, recent models of endogenous growth and technological progress, the Lucas asset pricing model, the Permanent Income Hypothesis and its extensions, the Mortensen-Pissarides search model of unemployment, models of dynamic optimal taxation, and models with incomplete markets and heterogeneous agents. The focus will be on theory, but students should be able to understand and interpret empirical work as well.

There is an important unifying methodological theme running throughout the course; namely, the use of recursive methods (eg, dynamic programming) to formulate and analyze complex dynamic stochastic general equilibrium models. One of the goals of the course will be to learn how to think in terms of state variables and Bellman equations. Another goal will be to learn how to solve Bellman equations, both analytically and numerically.

There are four major omissions from the course. First, business cycle theory is not covered. Presumably, that was covered in Econ 807. Second, monetary theory is not covered. Money is either exogenous or abstracted from entirely. Third, international and open-economy macro issues are given only slight attention. Fourth, recent developments in New Keynesian macro are not discussed. Hopefully, some of these topics will be covered in 809.

COURSE STRUCTURE

The first few weeks of the course will be devoted to learning some of the tools of modern macroeconomics. These include: Markov chains, stochastic difference equations and lag operators, Fourier transforms and spectral densities, and Bellman equations. Students will be asked to write simple MATLAB programs that implement the ideas discussed in class. The remainder of the course will put these tools to use in a variety of economic settings.

COURSE EVALUATION

		Weight in Grade
Problem Sets	–	30%
Midterm exam **(Friday, October 20)**	–	30%
Final exam **(date to be arranged)**	–	40%

The only way to learn macro is to do macro. Therefore, a key part of the course is a sequence of (approximately) bi-weekly problem sets. Students are encouraged to work in groups, but everyone must turn in their own copy. The problem sets are available as PDF files on the class webpage (at www.sfu.ca/$\tilde{\text{k}}$kasa/).

COURSE MATERIALS

There is one required book for this course: *Recursive Macroeconomic Theory*, by Lars Ljungqvist and Thomas Sargent (2nd Edition, 2004) published by MIT Press. There are also a number of journal articles, working papers, and supplementary notes that are available for download on the course webpage. Students desiring a more comprehensive and rigorous treatment of recursive methods should consult Stokey and Lucas' treatise *Recursive Methods in Economic Dynamics*, published in 1989, but still in print. Throughout the course, I will assume students have a background at roughly the level of David Romer's text *Advanced Macroeconomics*. Hence, students who do not already have a copy may want to acquire one. Both the Ljungqvist/Sargent book and the Romer text are on reserve at the library.

COURSE OUTLINE AND READINGS

Readings marked with a (*) are downloadable from the course webpage.

I. RECURSIVE METHODS (5 lectures)

Sept. 13 – **Introduction and Overview**
Ljungqvist & Sargent, Chpt. 1
* Sargent (1980), "Rational Expectations and the Reconstruction of Macroeconomics"
* Lucas (1976), "Econometric Policy Evaluation: A Critique"
* Sargent (1984), "Autoregressions, Expectations, and Advice"
* Prescott (2006), "The Transformation of Macroeconomic Policy and Research"

Sept. 15 – **Time Series: Markov Chains and Stochastic Difference Equations**
Ljungqvist & Sargent, Chpt. 2 (pgs. 29-55)

Sept. 20 – **Dynamic Optimization: Euler Equations and Bellman Equations**
Ljungqvist & Sargent, Chpt. 3 and Appendix A
* Stokey (2003), "Introduction to Optimal Control"

Sept. 22 – **Practical Dynamic Programming**
Ljungqvist & Sargent, Chpt. 4 (pgs. 95-104)

Sept. 27 – **Linear-Quadratic Dynamic Programming**
Ljungqvist & Sargent, Chpt. 5 and Appendix B
* Uhlig (1999), "A Toolkit for Analyzing Nonlinear Dynamic Stochastic Models Easily"
* Sims et al. (2003), "Calculating and Using Second-Order Accurate Solutions ..."
* Villaverde et. al. (2003), "Comparing Solution Methods for Dynamic Equil. Economies"

II. SEARCH AND MATCHING (4 lectures)

Sept. 29 – **McCall's Job Search Model**
Ljungqvist & Sargent, Chpt. 6 (pgs. 139-158)

Oct. 4 – **The Mortensen-Pissarides Matching Model**
Ljungqvist & Sargent, Chpt. 26 (pgs. 946-958)
* Shimer (2005), "The Cyclical Behavior of Equilibrium Unemployment and Vacancies"
Problem Set 1 due

Oct. 6 – **Competitive Search Equilibria**
Ljungqvist & Sargent, Chpt. 26 (pgs. 941-945, 959-960)
* Moen (1997), "Competitive Search Equilibrium"
* Mortensen & Wright (2002), "Competitive Pricing and Efficiency in Search Equilibrium"
* Rogerson, Shimer & Wright (2005), "Search-Theoretic Models of the Labor Market"

Oct. 11 – **Comparing Alternative Theories of Unemployment**
* Ljungqvist and Sargent (2005), "Jobs and Unemployment in Macroeconomic Theory"
* Ljungqvist and Sargent (2006), "Do Taxes Explain European Employment?"

III. COMPLETE MARKETS GENERAL EQUILIBRIUM (2 lectures)

Oct. 13 – **The Arrow-Debreu Model**
Ljungqvist & Sargent, Chpt. 8 (pgs. 208-223)

Oct. 18 – **Recursive Implementation of Arrow-Debreu Equilibria: Arrow Securities**
Ljungqvist & Sargent, Chpt. 8 (pgs. 223-237)
Problem Set 2 due

Oct. 20 **Midterm Exam**

IV. GROWTH THEORY (4 lectures)

Oct. 25 – **The Cass-Koopmans Model**
Ljungqvist & Sargent, Chpt. 14 (pgs. 449-454)
Romer, Chpt. 2 (pgs. 56-76)
* Lucas (2003), "Macroeconomic Priorities"

Oct. 27 – **The Diamond Model**
Romer, Chpt. 2 (pgs. 76-92)

Nov. 1 – **Endogenous Growth I**
Ljungqvist & Sargent, Chpt. 14 (pgs. 455-472)
Romer, Chpt. 3 (pgs. 100-125)
* Romer (1994), "The Origins of Endogenous Growth"
* Lucas (1988), "On the Mechanics of Economic Development"
* Lucas (1990), "Why Doesn't Capital Flow from Rich to Poor Countries?"

Nov. 3 – **Endogenous Growth II**
Romer, Chpt. 3 (pgs. 144-165)
* Prescott (1998), "Needed: A Theory of Total Factor Productivity"
* Parente & Prescott (1999), "Monopoly Rights: A Barrier to Riches"

V. ASSET PRICING (2 lectures)

Nov. 8 – **Euler Equations and Martingale Measures**
Ljungqvist & Sargent, Chpt. 13 (pgs. 392-426)
* Lucas (1978), "Asset Prices in an Exchange Economy"
Problem Set 3 due

Nov. 10 **Hansen-Jagannathan Bounds and the Equity Premium Puzzle**
Ljungqvist & Sargent, Chpt. 13 (pgs. 426-444)
* Kocherlakota (1996), "The Equity Premium: It's Still a Puzzle"
* Constantinides & Duffie (1996), "Asset Pricing with Heterogeneous Consumers"
* McGrattan & Prescott (2003), "Average Debt and Equity Returns: Puzzling?"

VI. DYNAMIC OPTIMAL TAXATION (4 lectures)

Nov. 15 – **Ricardian Equivalence**
Ljungqvist & Sargent, Chpt. 10

Nov. 17 – **Fiscal Policies in the Growth Model**
Ljungqvist & Sargent, Chpt. 11

Nov. 22 – **Ramsey Taxation in DSGE Models**
Ljungqvist & Sargent, Chpt. 15
* Atkeson, Chari & Kehoe (1999), "Taxing Capital Income: A Bad Idea"
* Aiyagari et. al. (2002), "Optimal Taxation without State-Contingent Debt"

Nov. 24 – **The Mirrlees Approach to Dynamic Optimal Taxation**
* Kocherlakota (2006), "Advances in Dynamic Optimal Taxation"
Problem Set 4 due

VII. INTRODUCTION TO INCOMPLETE MARKETS (2 lectures)

Nov. 29 – **Self-Insurance**
Ljungqvist & Sargent, Chpt. 16

Dec. 1 – **Competitive Equilibrium with Exogenously Incomplete Markets**
Ljungqvist & Sargent, Chpt. 17 (pgs. 566-585)
* Aiyagari (1994), "Uninsured Idiosyncratic Risk and Aggregate Saving"

Dec. 4-8 – **FINAL EXAM (exact date not yet decided)**
Problem Set 5 due