

Universidad Carlos III de Madrid
Department of Economics

Ph.D. Economics, 1st year

Macroeconomics II

Third Term 2010-2011

Professor: Matthias Kredler

Office: 15.2.10

Email: mkredler@eco.uc3m.es

Office hours: by appointment

TA: Robert Kirkby (robertdkirkby@gmail.com).

Aim: This course has two major aims: 1) get you acquainted with the non-stochastic and stochastic versions of the neoclassical growth model and the consumption-savings problem, two of the main workhorses of modern macroeconomics. 2) get you acquainted with *Dynamic Programming*, a powerful tool for solving infinite-horizon optimization problems.

Readings: We will cover *in detail* the first six chapters of *Recursive Methods in Economic Dynamics* by Stokey, Lucas, with Prescott (SLP), Harvard University Press (1989). These six chapters cover non-stochastic dynamic programming problems. We will also use chapters from *Recursive Macroeconomic Theory* by Lars Ljungqvist and Thomas Sargent (LS), MIT Press (2004).

As math supplements to Stokey, Lucas, with Prescott, you may find it helpful to consult *A First Course in Optimization Theory*, by R. Sundaram, Cambridge University Press (1996).

There will also be a set of Lecture Notes (by Nezih Guner), referred to below as LN.

Grading: Assignments (20%), one midterm (20%), final (60%).

Please check my web page www.eco.uc3m.es/mkredler for announcements, problem sets etc.

Course Outline

1. Finite-Horizon Dynamic Programming (LN, Chapter 5.1; Sundaram (1996), Chapter 11)
 - The life-cycle model and its implication, two-period search, computation of discrete one-sector growth model
 - Additional Readings:
 - Robert E. Hall (1978), “Stochastic Implications of the Life Cycle Permanent Income Hypothesis,” *Journal of Political Economy*, 86, 971-987.
 - Robert E. Hall (1988), “Intertemporal Substitution in Consumption,” *Journal of Political Economy*, 96, 339-357.
 - Peter Rupert, Richard Rogerson, and Randall Wright (2000), “Homework in Labor Economics: Household Production and Intertemporal Substitution,” *Journal of Monetary Economics*, 46, 557-579.

2. One-Sector Growth Model (LN, Chapter 5; LS Chapter 11)
 - One-Sector Growth Model, Lagrangian Approach for Solving Infinite Horizon Problems (Euler equations and transversality conditions), Fiscal Policy.
 - Additional Readings:
 - Lucas, Robert E., Jr. (1990), “Why Doesn’t Capital Flow from Rich to Poor Countries?” *The American Economic Review*, Vol. 80, Papers and Proceedings, pp. 92-96.
 - Lucas, Robert E., Jr. (2004), “Some Macroeconomics for the 21st Century,” *The Journal of Economic Perspectives*, Vol. 14, pp. 159-168.
 - Prescott, Edward C. (1988), “Robert M. Solow’s Neoclassical Growth Model: An Influential Contribution,” *Scandinavian Journal of Economics*, 90, pp. 7-12.
 - Solow, Robert M. (1956), “A Contribution to the Theory of Economic Growth,” *Quarterly Journal of Economics*, vo. 70, pp. 65-94.

3. Dynamic Programming under Certainty (Chapters 1-6, SLP; LN, Chapters 6-11).
 - Mathematical Preliminaries: Metric Spaces, Contraction Mapping Theorem, The Theorem of Maximum
 - LN, Chapter 7.
 - SLP, Chapter 3
 - Sundaram (1996), Chapter 12.
 - Dynamic Programming Under Certainty: Basic Results
 - LN, Chapter 8-10.
 - SLP, Chapters 4, 5.
 - Sundaram (1996), Chapter 12.
 - Deterministic Dynamics
 - LN, Chapter 11.
 - SLP, Chapter 6.
 - Equilibrium Concepts: Date-0 Arrow-Debreu, Sequence of Markets, Recursive Competitive Equilibrium.

4. Dynamic Programming under Uncertainty (LN, Chapters 12).
 - Stochastic version of one-sector growth model and consumption-savings problem: Event-tree formulation, Markov chains, Transition functions, convergence etc.
 - Recursive Competitive Equilibrium.
 - LS, Chapter 12.
 - Real Business Cycles.
 - Prescott, Edward C. (1986). “Theory Ahead of Business Cycle Measurement,” *Federal Reserve Bank of Minneapolis Quarterly Review*, 10, 9-22.
 - Lucas, Robert E., Jr. (1987), *Models of Business Cycles*, Basil Blackwell, Oxford.
 - Hansen, Gary and Wright, Randall. (1992) ”The Labor Market in Business Cycle Theory ” *Federal Reserve Bank of Minneapolis Quarterly Review*, Spring.

- Cooley, Thomas F. and Edward C. Prescott (1995), “Economic Growth and Business Cycles” in *Frontiers of Business Cycle Research*, Thomas F. Cooley (ed.), Princeton University Press: 1-38.
- Asset Pricing.
 - Mehra, R. and Prescott, E.C. “The Equity Premium: A puzzle,” *Journal of Monetary Economics*, 15, 145-161.
- Additional Readings:
 - Brock, W. A. and Mirman, L. J. (1972), “Optimal Economic Growth and Uncertainty: The Discounted Case” *Journal of Economic Theory*, 4, 497-513.
 - Kydland, F. E. and Prescott, E.C. (1982), “Time to Build and Aggregate Fluctuations,” *Econometrica*, 50-70.
 - Long, J. B. and Plosser, C. I (1983), “Real Business Cycles,” *Journal of Political Economy*, 91, 39-69.
 - Lucas, Robert E., Jr. (1987), *Models of Business Cycles*, Basil Blackwell, Oxford.

5. Search

- LS, Chapter 6.