UCLA, Department of Economics

ECONOMICS 202A
MACROECONOMIC THEORY I: DYNAMICS AND GROWTH THEORY
Fall 2023

Instructor: Gary D. Hansen (ghansen@econ.ucla.edu)

Teaching Assistant: Bangyu He (bangyuhe@g.ucla.edu)

Lectures: M W 2:00 – 3:15 PM in Rolfe 3126.
Review: F 12:00 – 1:50 PM in Bunche 3157.

Mid-term Exam: Friday, November 3 during TA session.

Final Exam: Wednesday, December 13, 11:30am-2:30pm, location TBD.

Office Hours: Monday and Wednesday, 3:15pm – 4:15pm (after class), and by appointment. In Bunche 9369.

Course Description:

This course is the first of a sequence that will introduce you to the methods, and some of the issues, of modern macroeconomics. Specifically, this quarter is an introduction to deterministic and stochastic neoclassical growth theory. Dynamic programming and recursive competitive equilibrium are the tools we will develop to study these models. Simple computational methods for analyzing the models also will be covered. The theory will be applied to questions related to business cycles. In particular, the goal is to master the basic theory and methods used in the "real business cycle" literature so that, by the end of the quarter, you are capable of making original contributions to this literature.

For those of you who believe you are not (yet) interested in concentrating in macro *per se*, this course will expose you to dynamic general equilibrium theory and *quantitative* methods for using this theory to interpret economic time series. This and related theory and methods have proven useful in many areas of economics where dynamic linkages and expectations about the future are relevant.

Grading:

Grades will be based on the maximum score obtained from two grading schemes: Scheme (1): 20% on two graded problem sets, 30% on a midterm exam and 50% on the final exam; Scheme (2): 20% on two graded problem sets and 80% on the final exam. Hence, the midterm exam is effectively optional, and the final exam will be cumulative.

Basic References:

Lars Ljungqvist and Thomas J. Sargent, *Recursive Macroeconomic Theory (Fourth Edition)*, MIT, 2018.

Nancy L. Stokey, Robert E. Lucas, Jr. with Edward C. Prescott, *Recursive Methods in Economic Dynamics*, Harvard, 1989.

Other readings will be made available on the course website.

COURSE OUTLINE AND PROPOSED CALENDAR

Subject to Revision

1. The Neoclassical Growth Model and Dynamic Programming Under Certainty. (3 lectures)

   Readings: Ljungqvist and Sargent, 16-17, 105-112, and 631-636.
   Stokey and Lucas, 8-16, 39-43, 43-88 (optional), and 97-100.

2. Stochastic Growth (3 lectures)

   Readings: Ljungqvist and Sargent, 29-49, 112-122.
   Lucas and Stokey, 16-22, 319-334

3. Recursive Competitive Equilibrium. (2 lectures)

   Readings: Stokey and Lucas, pages 22-32.
   Ljungqvist and Sargent, 276-281, 455-480.

4. Calibrating the Neoclassical Growth Model—Technological Progress and Population Growth

   Reading: Thomas F. Cooley and Edward C. Prescott, "Economic Growth and Business Cycles," in ***Frontiers of Business Cycle Research***, T.F. Cooley, editor. Princeton University Press, 1995. Pages 1-22.

5. Labor and capital income taxation.

   Reading: Ljungqvist and Sargent, Chapter 11.

6. Business Cycles.

   Readings: Gary D. Hansen and Randall Wright, "The Labor Market in Real Business Cycle Theory," *Federal Reserve Bank of Minneapolis Quarterly Review*, Spring 1992.
   Cooley and Prescott, 23-38.

7. Approximation and Solving Log-linear Euler Equations

   Reading: Harald Uhlig, "A Toolkit for Analyzing Nonlinear Dynamic Stochastic Models Easily," manuscript.
   Ljungqvist and Sargent, Chapter 4.

8. Methods for solving non-linear models (time permitting)