

Purpose of the Course

Modern macroeconomics studies the determination of, and dynamic interactions among, aggregate variables such as output, consumption, investment and employment and answers questions about the effects and desirability of various government policies. In this course we study the basic tools of macroeconomic theory that enable us to establish the existence and uniqueness of solutions to dynamic macroeconomic models. Topics include the neoclassical growth model, deterministic dynamic programming, competitive equilibrium, the welfare theorems, equilibrium dynamics, the open economy growth model, stochastic dynamic programming, continuous time optimization, and overlapping generations models.

Administrative Information

Lectures: MW 1005a-1120a (SocSci 311)

TAs: Mehmet Ozsoy and Chris Roark

Course website: Blackboard and <http://web.duke.edu/~acb8/econ320.htm>

Contact information: burnside@econ.duke.edu

Office location: Soc Sci 221.

Office hours: If my door is open, my door is open.

Required textbook:

The following book is required (it is also required for Econ 322 in the spring):

Ljungqvist, Lars and Thomas J. Sargent. *Recursive Macroeconomic Theory*. Cambridge: MIT Press, 2004. (referred to below as LS)

I consider the following book to be essential for students with a longer term interest in macroeconomics:

Stokey, Nancy L. and Robert E. Lucas Jr., with Edward C. Prescott. *Recursive Methods in Economic Dynamics*. Cambridge: Harvard Press, 1989. (referred to below as SLP)

Schedule: Lectures begin Aug 29 and end Nov 30. We will meet every Monday and Wednesday between these dates with following exceptions: there is no class on Oct 10 (Fall Break), no class on Nov 23 (Thanksgiving break) and the class scheduled for Nov 21 is canceled. I will update you on other schedule changes as the semester progresses.

We will have in-class midterm exams on Oct 3 and Nov 7. The final exam will be comprehensive, and will be held Dec 18 from 2pm to 5pm, according to the current university schedule. Assignments will be given out *approximately* weekly, but do not count toward the final grade. The grading scheme for the course is 20% for each midterm, 60% for the final exam.

Background Reading

I highly recommend that incoming graduate students familiarize themselves with the neoclassical approach to macroeconomics at an undergraduate level. A good way to do this is to read chapters 2, 3, 5, and 9 of Robert J. Barro's *Macroeconomics*, 5th ed. Cambridge: MIT Press, 1997. These particular chapters discuss the basic mechanics of the neoclassical model. Chapters 11–14 are also quite useful, covering growth and fiscal policy in rudimentary fashion. Early editions of Barro are similar in content.

I also recommend doing a little basic background reading on time series analysis. There are many sources for this, but the best ones are full textbooks on the subject. Chapter 2 in LS is one possibility. Another is to read the short primer on time series in my graduate econometrics notes, which are posted on the web.

Syllabus

Readings will be posted electronically to Blackboard. I post lecture notes and/or slides for *some* topics. These will be mentioned in class as they become available. Dates and topics are approximate, and are subject to change.

1. Deterministic Dynamic Programming and the Neoclassical Growth Model (Aug 29–Sep 7)

Lecture notes.

Mathematical theory of dynamic programming.

SLP chs 3 & 4.

LS, ch 3 (§1) and Appendix A (§1 & §2).

Sargent, Thomas J. *Dynamic Macroeconomic Theory*. Harvard, 1987. ch 1.

2. Competitive Equilibrium and the Welfare Theorems (Sep 12 & 14)

Lecture notes.

LS, chs 7, 8.

3. Deterministic Equilibrium Dynamics (Sep 19 & 21)

Sargent, Thomas J. *Macroeconomic Theory*, 2nd ed. Academic Press, 1987. ch 9.

Lecture notes.

4. Consumption (Sep 26 & 28)

Romer, David. *Advanced Macroeconomics*, 3rd ed. McGraw-Hill, 2006. ch 7.

Hall, Robert E. (1978) Stochastic implications of the life cycle-permanent income hypothesis: Theory and evidence, *Journal of Political Economy* 86, 971–87.

Deaton, Angus *Understanding Consumption*. Oxford, 1993. ch 3 & 4.

Sargent, Thomas J. *Dynamic Macroeconomic Theory*. ch 3, §1.

Midterm Exam 1: Oct 3

5. Primer on Time Series Econometrics (Oct 5)

Lecture notes.

LS, ch 2.

6. The Neoclassical Model in an Open Economy (Oct 12–19)

Lecture notes.

Barro, Robert J. and Xavier Sala-i-Martin *Economic Growth*, 2nd ed. MIT Press, 2003. ch 3.

King, Robert G. and Sergio Rebelo (1993) “Transitional Dynamics and Economic Growth in the Neoclassical Model,” *American Economic Review* 83, 908–31.

Mankiw, N. Gregory, David Romer and David N. Weil (1992) “A Contribution to the Empirics of Economic Growth,” *Quarterly Journal of Economics* 107, 407–37.

Rebelo, Sergio (1992) Growth in open economies, *Carnegie Rochester Conference Series in Public Policy* 36, 5–46.

Rebelo, Sergio (1998) “The Role of Knowledge and Capital in Economic Growth,” mimeo, Northwestern University.

7. Stochastic Dynamic Programming (Oct 24)

Lecture notes.

Hansen, Gary D. and Edward C. Prescott (1995) “Recursive Methods for Computing Equilibria of Business Cycle Models,” in Thomas F. Cooley ed. *Frontiers of Business Cycle Research*. Princeton University Press: Princeton, NJ.

LS, ch 3 (§2).

8. Stochastic Equilibrium Dynamics (Oct 26)

Lecture notes.

Sargent, Thomas J. *Macroeconomic Theory*, 2nd ed. Academic Press, 1987. ch 11.

9. Stochastic Competitive Equilibrium (Oct 31, Nov 2)

Lecture notes.

Hansen, Gary D. and Edward C. Prescott (1995) “Recursive Methods for Computing Equilibria of Business Cycle Models,” in Thomas F. Cooley ed. *Frontiers of Business Cycle Research*. Princeton University Press: Princeton, NJ.

LS, ch 8, 12.

Midterm Exam 2: Nov 7

10. Linear-Quadratic Dynamic Programming and the Kalman Filter (Nov 9 & 14)

LS, ch 5.

11. Models in Continuous Time (16)

Barro and Sala-i-Martin. Mathematical Appendix.

Dixit, Avinash K. *Optimization in Economic Theory*, 2nd ed. Oxford, 1990. ch 11.

Canceled: Nov 21

12. Overlapping Generations Models (Nov 28 & 30)

LS, ch 9.

Final Exam, Dec 18