

Macroeconomics  
411-1  
Fall, 2001  
Christiano

## Syllabus

### 1. General Information.

- Lectures are T-Th 8:30-10:20am, 104 Swift Hall. Recitation: Friday 9-11am.
- My office number is 3246, Andersen Hall; Phone: 491-8231. Email: l-christiano@northwestern.edu. Office hours: 3:15-4:30pm, Tuesday, or by appointment.
- TA: Roc Armenter, office hours, TBA; telephone number, 491-8205; office, 312 Andersen.
- Recitation in the week of November 12, will meet on Tuesday, November 13 in the usual lecture room. The Tuesday lecture will occur Friday, November 16, in the usual recitation room.
- The grades will be determined as follows: homeworks, 10%; midterm, 40%; final, 50%. There will be approximately seven homework assignments. You are requested to work in teams of up to five students on these problem sets, and only one should be submitted per group. With one exception, homeworks should be turned in to the Economics Department office by Wednesday, 5pm, in the week after they are assigned. The exception is the homework due on October 24, which you may turn in on Friday October 26.
- The midterm is on Thursday, October 25. The final is on Wednesday, December 12, 7 - 9pm, in the lecture room.

### 2. Goals.

Macroeconomics is about two things: (i) developing positive models that can help us understand the dynamics of key macroeconomic variables: employment, unemployment, interest rates, output, etc.; and (ii) using these models to make judgements about what policies the

government should, or should not, pursue. Classic questions include the proper setting of taxes and money over the business cycle. The purpose of the course is to study the tools needed to do research on (i) and (ii), and to review (a subset of) the relevant substantive findings reported in the literature.

To address (i), we will begin by developing the basic building block of modern macroeconomics: the infinite lived, deterministic, homogeneous agent growth model. One set of variations of this model will allow us to review a subset of the modern theory of growth. Another set of variations will allow us to review the theory of business cycles.

To address (ii), we will study the optimal determination of tax rates. We will first study this problem assuming the government can determine at some initial date what the optimal setting of these variables is for all time, and all possible circumstances, and that it can then commit itself credibly to actually implementing these policies. We will go on to study the more realistic (though more complicated, too) case where the government lacks the ability to commit.

- The textbook for the course is S-L:

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

Another excellent text is Ljungqvist and Sargent's, *Recursive Macroeconomic Theory*, MIT Press, 2000 (for related materials, see <http://www.stanford.edu/~sargent/>).

- Additional reading materials will be made available on the course website.

## COURSE OUTLINE

The number of lectures I expect to devote to each topic is given in parentheses. The primary and related readings for each lecture are listed.

1. Infinite Horizon Model With No Uncertainty and Fixed Labor.
  - (a) (two lectures) Efficient Allocations.
    - i. Sequence Approach (S-L: pp. 8-13, sec. 4.5).
    - ii. Function Space and Dynamic Programming (S-L; pp. 13-16, sec. 4.2, sec. 6.1).
  - (b) (two lectures) Equilibrium Concepts (S-L: sec. 2.3; Cooley-Prescott, 1995, pp. 8-10).
    - i. Sequence concepts:
      - A. Date 0 Arrow-Debreu.
      - B. Sequence-of-Markets.
    - ii. Recursive Competitive Equilibrium.
  - (c) (four lectures) Application: Growth Theory (Jones and Manuelli, 1997).
    - i. Exogenous growth models.
      - A. Growth generated by ‘disembodied’ technical change (S-L, sec. 5.4; related paper: Christiano (1989)).
      - B. Growth generated by investment-specific technical change (Greenwood, Hercowitz and Krusell, 1997, Hornstein and Krusell, 1996).
    - ii. Endogenous growth models.
      - A. “Ak” models (Christiano and Harrison (1999, Appendix); see also: Rebelo (1991)).
      - B. Learning-by-doing and learning-or-doing (S-L; sec. 5.7).
      - C. Increasing variety and specialization (Romer, 1987).
      - D. Overlapping-generations (Jones and Manuelli, 1997).

2. Adding Uncertainty and Variable Labor: the Real Business Cycle (RBC) Model.
  - (a) (four lectures) Standard RBC model
    - i. Business Cycle Implications (Cooley and Prescott (1995); see also: Prescott (1986), Summers (1986)).
    - ii. Asset Pricing (Boldrin, Christiano and Fisher (1997)).
  - (b) (four lectures) Variations:
    - i. RBC model with monopolistic competition (Farmer (1993), sec. 7.2)).
    - ii. RBC model with multiple equilibria and sunspot equilibria (Christiano and Harrison (1999), Bryant (1981,1983); Cass and Shell (1983); Cooper and John (1988); Diamond and Dybvig (1983); Diamond (1982); Farmer (1993); Farmer and Guo (1994,1995); Farmer and Woodford (1984); Gali (1994a,b); Krugman (1991); Matsuyama (1991); Shleifer (1983), Woodford (1986,1991)).
3. (two lectures) Optimal Policy
  - (a) The case of full commitment, (Chari (1988); see also Chari, Christiano and Kehoe (1994); Lucas and Stokey (1983)).
  - (b) The case of no commitment (the 'time inconsistency problem') (Chari (1988); see also: Chari, Christiano and Eichenbaum (1996); Chari and Kehoe (1980); Kydland and Prescott (1977); Stokey (1991)).

## References

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