

Macroeconomic Theory I
E522: Fall 2013
Department of Economics - Indiana University
SYLLABUS

Instructor:	Amanda M Michaud
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Office Hours:	Wylie Hall 205, Thursday: 9:00am-11:00am
Lecture:	Wylie Hall 329, Monday/Wednesday: 1:00pm-2:15pm
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Recitation	TBA , Friday: 3:00pm-4:30pm
Course website:	oncourse.iu.edu

Course Description: The objective is to introduce a subset of modern tools for carrying out dynamic general equilibrium analyses. We will use model economies for deductive analyses in the following sense: (i) to provide structure to isolate and better understand mechanisms and (ii) to generate hypothetical data to relate with observed data. The majority of this course will focus on the rigor necessary to provide such structure and briefly show how models can be used to address questions about observed behavior.

To minimally complete the course, a student must be able to: (i) precisely define an economic environment, (ii) define a general equilibrium, (iii) solve dynamic optimization problems, both in sequence form and with the tools of dynamic programming; and (iv) define a recursive competitive equilibrium. To excel in the course, a student will additionally understand when the following tools can be used and be able to implement them: (i) representative agents, (ii) mapping between the decentralized economy and planners' solution using welfare theorems, (iii) Arrow-Debreu map between the sequence problem and time-zero, and (iv) basic numerical techniques.

Prerequisites: This is not a course in mathematics nor in computer languages. Students are expected to have working knowledge real analysis, matrix algebra, probability theory and a computing language (FORTRAN, Matlab, C++ or Gauss). Some of these skills were covered in the Math Camp and Computing Mini-course or will be covered in E2242 or E2243. There are many resources to help with the remainder including texts, notes, and other academic departments.

Texts: The following texts are required. Additional papers will be posted as we go.

Recursive Macroeconomic Theory (Ljungqvist and Sargent (2004))

Recursive Methods in Economic Dynamics (Stokey et al. (1989))

The following texts are optional

Introduction to Modern Economic Growth (Acemoglu (2009))

Microeconomic Theory (Green et al. (1991))

Dynamic Economics: Quantitative Methods and Applications (Adda and Cooper (2003))

Assignments: Several problem sets and mini-projects will be assigned. All will be done in groups of approximately four students. They are used to aid students in learning how to apply tools covered in the class and to give the instructor feedback on students' progress. I find grading assignments does little to advance the first goal, but partially achieves the latter. Assignments will be posted on the course website and announced in class. Select answers will be posted.

Exams: Two midterms will be given in class. One final will be given at 5:00pm-7:00pm on Friday, December 20. There are no make-up exams.

Calculation of Course Grades: Midterm I and Midterm II are each blocks of 100 points. The first half of the final and the second half of the final are each blocks of 100 points. The group assignments form a block worth 100 points. The course grade will be the maximum equally weighted sum of three exam blocks with weights = $\frac{1}{4}$ plus the group assignment block with weight $\frac{1}{4}$.

Additional Remarks: Students are permitted (and encouraged) to discuss macroeconomics, including answers to problem sets. Copying is not allowed. Academic Dishonesty in the form of cheating or otherwise, will not be tolerated and may result in severe academic sanctions.

References

ACEMOGLU, D. (2009): *Introduction to Modern Economic Growth*, no. v. 1 in *Introduction to Modern Economic Growth*, Princeton University Press.

ADDA, J. AND R. W. COOPER (2003): *Dynamic Economics: Quantitative Methods and Applications*, vol. 1 of *MIT Press Books*, The MIT Press.

GREEN, J., A. MAS-COLELL, AND M. WHINSTON (1991): *Microeconomic Theory*, Oxford University Press.

LJUNGQVIST, L. AND T. J. SARGENT (2004): *Recursive Macroeconomic Theory, 2nd Edition*, vol. 1 of *MIT Press Books*, The MIT Press.

STOKEY, N., R. LUCAS, AND E. PRESCOTT (1989): *Recursive Methods in Economic Dynamics*, Harvard University Press.

Course Outline:

1. Introduction to Macroeconomics
2. Finite Horizon Optimization Problems
 - Endowment Economies: preferences, wealth, and substitution effects
 - Elastic Labor Supply: GHH preferences
 - No-Ponzi Condition and Transversality Result
 - Numerical Solution
3. Infinite Horizon Optimization Problems
 - Neoclassic Growth Model
 - Steady States and Transitions
 - Numerical Solution
4. Dynamic Programming
 - SLP Chapter 4
 - Value Function Iteration
5. Main Concepts in General Equilibrium
 - Arrow-Debreu Time Zero
 - Sequential Markets
 - Welfare Theorems
 - Negishi (1960) Method
6. Aggregation and the Representative Agent
7. Growth Model
 - Recursive Competitive Equilibrium
 - Exogenous Growth
 - Endogenous Growth: Learning by Doing
8. Fiscal Policy
 - Tax-Distorted Competitive Equilibrium and Planner's Problems
 - Ricardian Equivalence
 - Ramsey Optimal Taxation
9. Overlapping Generations
 - Welfare Theorems
 - Money and Real Assets (Lucas Tree)
 - Social Security and Rational Expectation Politico-Economic Equilibria

10. Stochastic Problems

- Mathematic and notation concerns
- Definition of a state and of an equilibrium

11. Search Models

- One-Sided Search-
- Two-Sided Search- MP Model

12. Income Fluctuation Problems

- Permanent Income Hypothesis
- Prudence and Precautionary Savings
- Borrowing Constraints

Midterm 1 covers 1-4 . Midterm 2 covers 5-9. Final covers all material.