EC 205: Macroeconomic Theory I

Fall Semester

1. Instructor Information

Professor Alan Finkelstein Shapiro
Braker Hall, Room 306
Email: Alan.Finkelstein_Shapiro@tufts.edu

2. Course Information

The course will have a Teaching Assistant, who will hold weekly recitations. These recitations are meant to (1) go over some of the more technical details behind the material I cover in class, (2) provide more background for the computational projects (see below), and/or (3) go over any questions that you may have about the material. I strongly encourage you to ask any questions you may have about the material (as simple as you think they may be) during class. Everyone can benefit from these questions!

3. Course Overview, Objectives, and Methodology

This course provides a broad overview of modern macroeconomic theory with a focus on business cycles and dynamic stochastic general equilibrium (DSGE) models, the macroeconomics of labor markets, and (if time permits) the role of financial frictions in aggregate fluctuations.

Modern macroeconomics relies heavily on quantitative methods to delve deeper into key aspects that we want to understand as macroeconomists and policymakers. As part of the course, I will be introducing basic computational techniques that will enable us to analyze some of the models we cover in a quantitative fashion. Thus, the course will not only cover a good deal of modern macroeconomic theory, but will also let you experience first-hand how to analyze these models beyond pencil and paper. The course will put emphasis on both the economic intuition behind each of the models we study (and will highlight the advantages and limitations of each of the models), as well as some of the more technical aspects of modern applied macroeconomic theory. By the end of the course, students will have a broad perspective of modern macroeconomics as well as a solid grasp of the tools used for both positive and normative analysis of key macroeconomic issues.

The course begins by providing a broad overview of the origins of modern macroeconomics. This sets the stage for introducing the basic modern business cycle framework, the Real Business Cycle (RBC) model. We then build upon this model by exploring several modifications that not only aim to improve the fit of the model with the data (and hence provide a better laboratory to understand aggregate fluctuations and the implications of different frictions), but also to provide more suitable frameworks to explore specific positive and normative questions in macroeconomics. These modifications include the introduction of an extensive margin for labor, nominal rigidities, labor search and matching frictions, and financial imperfections, among others. Throughout the course, we will rely on several seminal papers in the literature as well as papers on the frontier of the field. Along the way, students will be able to get hands-on experience by writing and simulating some of these models in MATLAB through a series of computational projects. No prior knowledge of MATLAB is required. All computational projects will be completed in groups of 2 or 3 students. I find this to be an excellent way for you to learn from each other. The computational projects will not only allow you to review some of the economic intuition highlighted
in class, but will also allow you to learn some of the technical tools used in modern macroeconomic analysis.

Modern macroeconomic theory tends to be fairly technical. As such, a solid grasp of differential calculus and probability theory is very useful. If you feel the need to brush up on some intermediate macroeconomic theory, Stephen Williamson’s *Macroeconomics* (2010) or Sanjay Chugh’s *Modern Macroeconomics* (forthcoming) are good sources. In general, David Romer’s book should be the best source to complement the material we will be covering during the semester (which will be slightly more technical than the chapters in Romer). In general, the minimum requirements for this course are having taken EC 18 or its equivalent (intermediate macroeconomic theory), a course in differential calculus, and a basic probability and statistics course.

4. Grades and Distribution of Grades

The final grade will be determined by a midterm exam, three group computational projects, and a second exam at the end of the semester.

| First computational project | (20%) |
| Second computational project | (20%) |
| First exam | (25%) |
| Third computational project | (20%) |
| Second exam | (15%) |

5. Important Dates

First day of classes (university-wide):
First exam: Wednesday October 26
Last day of classes (university-wide): Friday December 11
Second exam: Friday December 18.

6. Tentative Dates for Computational Projects

Note that these are tentative (flexible) dates and will depend on how quickly we go through each of the topics in the course. You will have between 2 and 3 weeks to complete each computational project.

Computational Project 1: Wednesday October 7
Computational Project 2: Wednesday November 4
Computational Project 3: Wednesday November 30

7. Tentative Outline

Note: these dates are subject to change depending on our progress during the semester. Important note: there are no classes on Wednesday November 11. As such, Tuesday November 10, follows a Wednesday schedule (so we will meet on that Tuesday).
| Date       | Lecture/
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<tbody>
<tr>
<td>September 9</td>
<td>Lecture 1: Introduction</td>
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<td>September 14</td>
<td>Lecture 2: Dynamic Programming and Markov Chains</td>
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<td>September 16</td>
<td>Lecture 3: The RBC Model</td>
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<td>September 21</td>
<td>Matlab Lecture</td>
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<td>September 23</td>
<td>Lecture 4: Local Approximation Methods</td>
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<td>September 28</td>
<td>Dynare Lecture</td>
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<td>September 30</td>
<td>Lecture 5: DSGE Models with Indivisible Labor</td>
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<td>October 5</td>
<td>Lecture 6: DSGE Models with Money</td>
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<td>October 7</td>
<td>Lecture 7: DSGE with Monopolistic Competition</td>
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<td>October 12</td>
<td>Lecture 8: DSGE Models with Nominal Rigidities</td>
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<td>October 14</td>
<td>Lecture 9: DSGE Models with Nominal Rigidities</td>
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<td>October 19</td>
<td>Lecture 10: Medium-Scale DSGE Models</td>
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<td>October 21</td>
<td>Review Session</td>
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<td>October 26</td>
<td>Exam 1</td>
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<td>October 28</td>
<td>Lecture 11: Introduction to Labor Markets</td>
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<td>November 2</td>
<td>Lecture 12: Search Models of the Labor Market</td>
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<td>November 4</td>
<td>Lecture 13: Search Models of the Labor Market</td>
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<td>November 9</td>
<td>Lecture 14: The Cyclic Behavior of Labor Markets</td>
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<td>November 10</td>
<td>Lecture 15: DSGE Models with Search Frictions</td>
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<td>November 16</td>
<td>Lecture 16: On-the-Job Search and Participation</td>
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<td>November 18</td>
<td>Lecture 17: Labor Market Structures</td>
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<td>November 23</td>
<td>Lecture 18: Labor Market Structures</td>
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<td>November 30</td>
<td>Lecture 19: DSGE Models with Financial Frictions</td>
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<td>December 2</td>
<td>Lecture 20: Models with Financial, Labor Frictions</td>
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<td>December 7</td>
<td>Lecture 21 (TBD)</td>
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<td>December 9</td>
<td>Review Session</td>
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8. References

The course will rely heavily on published or working papers. David Romer’s *Advanced Macroeconomics* is our reference book. It provides a good introduction to some (but not all) of the topics we will cover in class. Please feel free to ask me about any other references that would be more suitable given your background in economics and mathematics. Additional useful textbook references include:


Other sources that have more advanced material include:


The following list of papers is much longer relative to what we can cover in this course. I am explicitly including additional papers under each topic for those of you who are interested in exploring specific topics in more detail. Most (but not all) of the papers marked with a * will be covered in class. I will let you know which papers you have to read for class in advance as we move along. All papers should be available online (either through the journal websites, or on the authors’ websites). You should have access to all online published papers through the Tisch Library website.

**A Debate over Modern Macroeconomics and the Agenda Forward (Lecture 1)**


Real Business Cycles (Lectures 2 and 3)


*[DR] Chapter 5.


Dynamic Programming and Basic Computational Methods (Lecture 4)


Ljungqvist and Sargent, Chapter 1.4, Chapter 2.2, Chapter 3, 4 (obligatorio para alumnos de doctorado)


Quantitative Macroeconomic Models: Introducing Employment and Money (Lectures 5 and 6)


Quantitative Macroeconomic Models: Monopolistic Competition and Nominal Rigidities (Lectures 7, 8, and 9)


*[DR] Chapters 6 and 7.


Quantitative Macroeconomic Models: Medium-Scale Models (Lecture 10)


Unemployment and Search Frictions (Lectures 11 through 16)


*[DR] Chapters 10.


**Search and Matching Models beyond Advanced Economies (Lectures 17 and 18)**

*Bosch, Mariano and William F. Maloney. 2008. “Cyclical Movements in Unemployment and Informality in Developing Countries,” *IZA Discussion Papers 3514*, Institute for the Study of Labor (IZA).*


**Financial Frictions and Business Cycles (Lectures 19 and 20)**


**Monetary Policy and Unemployment (not covered in this course)**

