1 Course description

The purpose of this course is to build your foundation knowledge in the area of Macroeconomics. In this course we will spend a fair amount of time developing techniques for dynamic analysis and applying the results to the study of traditional macroeconomic questions. The emphasis will be on the development of formal dynamic models, and in working out the implications that theory has for econometric practice. Since the purpose is to help you work with as many models and to develop as many skills as possible that will let you use models to discuss economic issues the course will be of necessity "broad." That is, I will try to cover a lot of topics. We will also emphasize basic computational methods of dynamic programming and competitive equilibrium. Several homework assignments will involve using the standard programming languages (e.g., MATLAB and DYNARE extension of MATLAB) to compute solutions to dynamic programming problems and the recursive competitive equilibrium. An introduction to MATLAB will be given at an appropriate time.

2 Prerequisites

Even though we will discuss the basic material in class, it is absolutely necessary that you are familiar with basic notions of calculus, constrained optimization, probability and statistics. This is a graduate course in economics.

3 Textbook

There is no required textbook of the course. Course readings and lecture notes will be made available online and/or hard-copy. The following are some suggested textbooks if you intend to pursue a Ph.D. in economics later on. I will use at most 1-2 chapters from each.


4 Course requirements

4.1 Class participation

Attendance is not mandatory. However, active attendance to and participation in class is strongly encouraged.

4.2 Short Quizzes

We will have a random number of quizzes during the course. Think of them as a way to make sure if you’re on the right track. There are absolutely no make-ups on quizzes under any condition.

4.3 Problem Sets

I will give you several (probably 2) problem sets during the course. They will be posted on the course website. Both problem sets should be typed using a program like WinEdit or Scientific WorkPlace. (but definitely not MathType or Word!!!) Work that is not typed gets an automatic discount of 30% of the final grade for the problem set.

Assignments not turned in by the due date will be penalized 15 (out of 100) points for each day it is late, up to a maximum of 45 points. Problem sets will not be accepted after four days of their due date, or after I post the problem set’s answer key, whichever comes first. Of course, a documented family or medical emergency may exempt you from this rule.

You may form groups of up to 3 students and hand your problem sets together. I will assume that all students cooperate to prepare the problem set (my way of verifying this will be the midterm and final examinations). You are strongly encouraged to work and cooperate with other groups; however, each group is responsible of writing up their own problem set.

4.4 Midterm Exam

There will be one midterm exam.
5 Grading policy and grading scale

The weights for the final score in the first part of EC 503 will be as follows:

<table>
<thead>
<tr>
<th>Concept</th>
<th>Percentage of final grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC 489</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Problem Sets</td>
<td>11%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>29%</td>
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</tbody>
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6 Tentative Course Schedule

The material that will be covered is summarized below. In the course of progress this schedule may change. I will try to notify you in advance if and when such a change occurs.

Weeks 1-3: General Equilibrium and RBC Models

1. Introduction to General Equilibrium
2. One-period, two-period, finite-horizon, infinite-horizion models
3. Deterministic Dynamic Programming
4. Basic Numerical Methods and Introduction to Matlab
5. Calibration and Simulation
7. Endogenizing Labor Supply

Readings for Real Business Cycle Models

- Plosser, Ch. (1989) "Understanding Real Business Cycles". JEP


**Weeks 4-5: Overlapping Generations: Theory and Applications**

1. Endowment Economies with Homogenous and Heterogenous Agents
2. Production Economies with Homogenous and Heterogenous Agents
3. Applications in Unified Growth Theory

**Readings for OLG**


• De La Croix-Michel, Chapters 1,2


• Ljungqvist-Sargent, Chapter 9.


• Stokey-Lucas-Prescott, Chapter 17.

**Weeks 5-6: Endogenous Growth: Theory and Applications**

1. Growth Econometrics
2. Basic Models of Endogenous Growth

**Readings for Endogenous Growth**


When I was teaching a full-semester length course I generally had some time to cover topics below; but I will not have time for these in a half-semester course. Nevertheless, we may spend one lecture time to roughly discuss these topics:

**Theory of Optimal Taxation**

1. Taxation with Commitment
2. Taxation without Commitment

**Readings for Optimal Taxation**

Monetary RBC and New-Keynesian Models
Readings for NK Models


• Gali, Chapters 2 and 3