Overview

API 109 is the first semester of the two-semester sequence in advanced microeconomic analysis for MPA/ID students. The goal of the course is to prepare students to analyze applied problems in international development using the tools of modern microeconomic theory. The course is a doctoral-level course in microeconomic theory with an eye toward policy applications in development economics.

Audience

This course is intended for first-year MPA/ID students. Students not in the MPA/ID program will be admitted only with the permission of the instructor and only under exceptional circumstances. Students interested in a similar advanced microeconomics course should consider API 111 / Econ 2020a / HBS 4010 instead.

Prerequisites

The main prerequisite for this course is an understanding of multivariate calculus. Familiarity with linear algebra, probability theory, and mathematical optimization is also helpful. The most important prerequisite, however, is a degree of “mathematical sophistication” and comfort with rigorous reasoning and arguments.

Date: August 24, 2017.
Requirements and Grading

The course requirements include the completion of several problem sets, a midterm exam, and a final exam. Your grades on these tasks will be weighted according to Scheme A and Scheme B.

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<thead>
<tr>
<th></th>
<th>Scheme A</th>
<th>Scheme B</th>
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<tbody>
<tr>
<td>Problem Sets</td>
<td>15 %</td>
<td>15 %</td>
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<tr>
<td>Midterm Exam</td>
<td>25 %</td>
<td>0 %</td>
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<tr>
<td>Final Exam</td>
<td>60 %</td>
<td>85 %</td>
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Your final score will be computed according to the most favorable (for you) of the two weightings. Letter grades will be assigned based on your final weighted score. The distribution of course grades will correspond roughly to the Harvard Kennedy School’s recommended grade distribution.

Exams

The midterm exam will be held in class. The final exam will be scheduled by the registrar during the final exam period. See the Important Dates section below for further information.

Problem Sets

Problem sets are graded primarily for completion and only a “check+/check/check−/no credit” will be offered for feedback. Earning a “check−” or better gives you full credit for the problem set. Sloppy, half-hearted, or incomplete work is unlikely to receive credit. We will drop your lowest problem set grade in calculating your grade for this part of the class.

You are encouraged to work in small groups (four or fewer students) on the problem sets, but you must hand in independently written-up solutions. If you choose to collaborate with others, please identify other group members on your write-up. It will be very difficult to do well on the exams unless you can independently complete problem-set-like questions.

Unless you make prior arrangements, you must submit completed problem sets in hardcopy to the MPA/ID assignment dropbox before the due date. Do not bring assignments to lecture. Late problem sets will not be accepted. There is no need to type-up your problem set solutions, but sloppy work will not receive credit.

Review Sections

The teaching fellow will hold weekly review sections. Formally, attendance at these sections is optional. However, most students will benefit greatly from attending one weekly review section.

Course Readings

There will be required readings from the following sources:


• Miscellaneous academic journals.

MWG is the standard textbook used in economics Ph.D. programs. We will also use a set of supplemental notes authored by Nolan Miller. These notes are freely available online. Readings from academic journals can be accessed online through the Harvard Library’s website.

For some lectures there are suggested/optional readings from the following sources:

• *Lecture Notes in Microeconomic Theory* [Rubinstein] by Ariel Rubinstein.

• *Advanced Microeconomic Theory* [Jehle and Reny] by Geoffrey A. Jehle and Philip J. Reny.

• *Cooperative Microeconomics: A Game Theoretic Introduction* [Moulin] by Hervé Moulin.

• *Economics and Consumer Behavior* [Deaton and Muellbauer] by Angus Deaton and John Muellbauer.

For a different exposition of the course material and for more exercises, you may wish to consult *A Course in Microeconomic Theory* by David M. Kreps, *Microeconomic Foundations I: Choice and Competitive Markets* by David M. Kreps, or *Microeconomic Analysis* by Hal R. Varian. Students seeking a math supplement may wish to consult *Mathematics for Economists* by Carl P. Simon and Lawrence E. Blum or *Fundamental Methods of Mathematical Economics* by Alpha C. Chaing.

**Optional Enrichment Lectures**

This course touches many topics and regrettably some subjects cannot be covered in the depth that they ought to be. Some students may benefit from gaining exposure to more advanced topics of particular interest. Thus, the following optional enrichment lectures are planned:

1. Discrete Exchange and Assignment Markets
2. Existence of Walrasian Equilibrium
3. General Equilibrium and Uncertainty

*Optional enrichment lectures are optional.* Any new concepts presented are not exam material. Consult the course calendar below for details concerning these lectures.

**Audio/Video Recordings**

I kindly ask you not to make audio or video recordings of the lectures.
Advice

1. Exam questions will resemble problem set questions. Please seek out practice problems wherever you can. Look beyond the assigned problem sets! Many textbooks have extra exercises. The internet is another resource. The teaching fellow, course assistants, and I are more than happy to help you solve/learn relevant material that you encounter independently.

2. Read the assigned readings before lecture and again after lecture. The excellent notes by Nolan Miller parallel MWG and are less dense. You may wish to read them first.

3. If pressed for time, you are better off practicing problem solving rather than memorizing the details of an assigned text.

4. Please feel welcome to ask questions in class. Illuminating digressions are exciting. However, I may defer your question to a later date or to office hours if it will get us too far off track.

5. Please make use of office hours. Even if you have no specific questions about the course material, please feel welcome to visit, chat, ask questions, or simply say hello.

Credits

This course draws on material that I was fortunate to encounter as a student, teaching assistant, and faculty. I am particularly indebted to David Ahn, Bob Anderson, Chris Avery, Ben Hermlin, Shachar Kariv, Botond Kőszegi, Nolan Miller, Matthew Rabin, Martin Rotemberg, and Chris Shannon. I also thank former teaching assistants and students whose input has improved the class.
Important Dates

Exams are scheduled for the following dates:

- Midterm Exam: 11.45–13.00, October 2, 2017. Location: In Class.
- Final Exam: 9.00–12.00, December 14, 2017. Location: TBA.

Problem sets are due on the following dates:

<table>
<thead>
<tr>
<th>Problem Set</th>
<th>Date Due</th>
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<tr>
<td>1</td>
<td>September 11</td>
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<tr>
<td>2</td>
<td>September 18</td>
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<td>3</td>
<td>September 25</td>
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<td>October 16</td>
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<td>October 30</td>
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<td>6</td>
<td>November 13</td>
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<td>7</td>
<td>November 27</td>
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There is a regular lecture scheduled on Friday, September 1. It will be held at the regular class time and location.

Due to the API 209 midterm exam, the review sections on Friday, October 6, 2016, are rescheduled as follows: (1) 13.15–14.30 [Starr] and (2) 14.45–16.00 [Starr].

There are no lectures on the following dates:

- Monday, September 4, 2017 (Labor Day)
- Monday, October 9, 2017 (Columbus Day)
- Wednesday, November 22, 2017 (Thanksgiving Recess)
Course Calendar

The calendar may be adjusted depending on our progress. There are two types of readings. Required readings you should attempt before class and review after class. Optional readings may be assigned as the course proceeds to facilitate discussion, illustrate applications, or to provide additional context. Additional readings may be added based on class interest.

Key: • = required reading. ◦ = optional/supplemental/recommended reading.

August 28
Lecture 0. Introduction.


August 30
Lecture 1. Introduction / Consumer Theory 1: Preferences and Utility.

• MWG 1.A–1.B.

◦ Jehle and Reny 1.1–1.2.

◦ Miller Chapter 1.

◦ Rubinstein Lecture 2.

◦ Deaton and Muellbauer Chapter 1, 2.1–2.2.

September 1

• MWG 3.A–3.D.

• Miller 3.1–3.3.

◦ MWG Appendix M.K (Constrained Optimization).

◦ Jehle and Reny 1.3–1.4; Appendix A2.

◦ Rubinstein Lecture 4.
September 4
No Lecture (Labor Day).

September 6

- MWG 3.D–3.G.
- Miller 3.4.
  - Jehle and Reny 1.4–1.5.
  - Deaton and Muellbauer 2.3–2.5.

September 11

- MWG 3.I.
- Miller 3.4.
  - Deaton and Muellbauer 7.4.

September 13

- MWG 2.F & 3.J
  - Rubinstein Lectures 3 & 5.
  - Jehle and Reny 2.3.
  - Deaton and Muellbauer 2.6.
September 18  
  
- MWG Chapter 6.
- Miller Chapter 6.
  - Rubinstein Lectures 7 & 8.
  - Jehle and Reny 2.4.
  - Deaton and Muellbauer Chapter 14.

September 20  
  
- MWG Chapter 6.
- Miller Chapter 6.
  - Jehle and Reny 2.4.

September 25  
  

September 27  
Lecture 9. Catch-up / To Be Announced.

October 2  
Midterm Exam.
  
- In class, closed-book exam.
- Covers all preceding lectures.
- No electronics; however, non-graphing and non-programmable calculators are allowed.
October 4

- MWG 5.A–5.C.
- Miller 5.1–5.2.
  - Jehle and Reny 3.1–3.2.

October 9
No Lecture (Columbus Day).

October 11

- MWG 5.D.
- Miller 5.3–5.5.
  - Jehle and Reny 3.3–3.5.

October 16

  - Moulin 3.2.
October 18
   - MWG 15.A–15.B.
   - Jehle and Reny 5.1.
   - Moulin 3.6.

October 20
Optional Enrichment Lecture 1. Discrete Exchange and Assignment Markets.
   - Time & Location: 16.15–18.00, Littauer L-332 (Deland Classroom) at the Kennedy School.

October 23
   - MWG 15.A–15.B.

October 25
   - MWG 15.C.
   - Jehle and Reny 5.3.

October 30
Lecture 16. First and Second Welfare Theorems.
   - Jehle and Reny 5.2.

November 1
   - MWG 11.A–11.C.
   - Miller 8.1–8.3.
November 3
Optional Enrichment Lecture 2. Existence of Walrasian Equilibrium.

- Time & Location: 16.15–18.00, Littauer L-332 (Deland Classroom) at the Kennedy School.
- MWG 17.A–17.C.
- Jehle and Reny 5.1–5.2.

November 6


November 8
Lecture 19. Two-Sided Markets 1: One-to-one Matching.

- Moulin 3.3.

November 13

- Moulin 2.2–2.3, 3.4–3.5.

November 15

November 17

- Time & Location: 16.15–18.00, Littauer L-332 (Deland Classroom) at the Kennedy School.
- MWG 19.A–19.E.
- Jehle and Reny 5.4.

November 20


November 22
No Lecture (Thanksgiving Recess).

November 27
Lecture 23. Catch-up / To Be Announced.

November 29


December 14
Final Exam.

- Time: 9.00–12.00
- Location: TBA
- The exam is closed book and covers the entire course.
- Non-graphing and non-programmable calculators are allowed. Other electronics are not allowed.