Advanced Microeconomic Policy Analysis II  
API-110  
Course Syllabus

**Faculty:**
Jie Bai  
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Gabriel Kreindler  
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Preston Pero  
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T: (617) 998-2600  
E: preston_pero@hks.harvard.edu

**Office Hours:**
Mondays, 2:45 PM – 4:45 PM (Gabriel Kreindler, 27JAN – 05APR)
  • Sign-up link: https://my.timetrade.com/book/FSR4Q
Mondays, 3:30 PM – 5:30 PM (Jie Bai, 06APR – 15MAY)
  • Sign-up link: https://my.timetrade.com/book/71DPL

Students are encouraged to sign up either in small groups or alone. If you are unable to attend office hours or they are full, please contact Preston for a different time.

**Teaching Fellow:**
Elizabeth Spink  
espink@g.harvard.edu

**Course Assistants:**
Joao Alcantara  
joao_alcantara@student.hks.harvard.edu

Anais Anderson  
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Karlygash Zhunussova  
karlygash_zhunussova@student.hks.harvard.edu

**Office Hours:**
Mondays, 2:45-4:45p, O-401 (unless announced)

Mondays, 4:30-6:30p, L-237

Tuesdays, 4:00-6:00p, L-382

Tuesdays, 6:00-8:00p, L-380

Conceptual Office Hours:  
TBD (as needed)

**Course Description:** API-110 is the second half of the two-semester sequence in advanced microeconomic analysis for MPA/ID students. The aim of this course is to further equip students with tools of modern microeconomic theory helpful in analyzing issues in international development. Topics covered will include game theory, information economics, contract theory, and touch on experimental/behavioral economics.

**Audience:** The 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 instructors and only under exceptional circumstances.

**Instructors:** The first part of the course is taught by Gabriel Kreindler and the second part by Prof. Jie Bai.
Class Meetings and Review Sessions:
The course meets twice per week for lecture:

- Monday and Wednesday, 1:15pm-2:30pm
- Room: Littauer 140

There will be two review sessions (students only need to attend one) offered on Fridays by the Teaching Fellow:

- Review Session 1: Friday 1:15 PM – 2:30 PM in Littauer 140
- Review Session 2: Friday 2:45 PM – 4:00 PM in Littauer 140

In addition, course assistants will hold weekly office hours to help with the homework and basic conceptual questions. Students are encouraged to consult the Teaching Fellow and the instructors for more advanced questions.

Note the following exceptions:

Class day/time changes:
The class that would normally fall on April 1st has been tentatively rescheduled to take place on Friday, March 27th in L-140 from 11:45a-1:00p. This change has been reflected in the schedule below.

Class on April 29th has been tentatively rescheduled to take place from 12:30-2:30p in Littauer 150. This will be a combined lecture with DEV-102. This change has been reflected in the schedule below.

Prerequisites: API-109 or its equivalent. For equivalent courses, the same pre-requisites as in API-109 apply.

Grading:
Grades for the course will be assigned based on:

- Problem Sets 15%
- Midterm 35%
- Final 50%

Examinations: There will be a midterm examination on Monday, March 9th, 2020 during class time in Littauer 140 and the final examination is scheduled for Friday, May 8th, 2020 from 9am-12n (location TBD).

Problem Sets: There will be a total of 8 Problem sets assigned generally every week (usually on a Wednesday and due back on the Wednesday a week later). Unless you make prior arrangements with the instructors, you must submit completed problem sets in hard copy to the MPA/ID course drop box by 10:10am on the due date. Do not bring assignments to lecture. Problem sets turned in after that will be considered late and will not receive any credit.

Problem sets are graded on a “check+/check/check−/no credit” basis and are primarily intended for completion. Earning a “check−” or better gives you full credit. Sloppy, half-hearted, or incomplete work is unlikely to receive credit. We will drop your lowest problem set grade in calculating your final grade. For students with borderline scores on the exams, consistent good performance on the problem sets could help to bump up a grade.

Discussion and the exchange of ideas are essential to academic work. You may work in small groups (four or fewer students) on the problem sets, but please do the write-ups individually. We do not expect to see identical answers from different students. You should ensure that any written work you submit for evaluation is the result of your work and that it reflects your own approach and understanding of the topic. If you choose to collaborate with others, please identify other group members on your write-up.
Due Dates:
- Problem Set 1: February 5, 2020 (Wednesday)
- Problem Set 2: February 12, 2020 (Wednesday)
- Problem Set 3: February 26, 2020 (Wednesday)
- Problem Set 4: March 4, 2020 (Wednesday)
- Problem Set 5: April 1, 2020 (Wednesday)
- Problem Set 6: April 8, 2020 (Wednesday)
- Problem Set 7: April 15, 2020 (Wednesday)
- Problem Set 8: April 22, 2020 (Wednesday)

Readings:
In addition to the texts used in API-109 (MWG in particular), the following books are required for this course:

The texts are available at the Harvard Coop and are placed on reserve at the HKS library. We will also assign a set of selected academic papers to read. Readings from academic journals can be accessed on the course website or through the Harvard Library. Any additional readings and supplementary notes will be posted on the Canvas.

Students may also want to consult the following optional texts:

**Theory:**
- Fudenberg, Drew *Game Theory* 1991
- Kreps, David *Game Theory and Economic Modeling* 1990
- Hart, O. *Firms, Contracts and Financial Structure* 1995
- Kreps, David. *A Course in Microeconomic Theory* 1990
- Varian, H. *Microeconomic Analysis* 1992

**Application/Development:**
- Wydick, Bruce. *Games in Economic Development* 2007
- Basu, K. *Analytic Development Economics* 1998
- Bardhan, P and C. Udrey. *Development Microeconomics* 1999

**Credits:**
This course draws on materials from previous API-110 course taught by Asim Khwaja and materials that Gabriel and Jie were fortunate to encounter at MIT, Yale and Harvard. We are especially grateful to Dirk Bergemann, Glen Ellison, Robert Gibbons, Bengt Holmstrom, Johannes Horner, Maciej Kotowski, Juuso Toikka, and Muhamet Yildiz.
### Spring Schedule 2020

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>Mon</td>
<td>27-January</td>
<td>Lecture 1</td>
<td></td>
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<tr>
<td>Wed</td>
<td>29-January</td>
<td>Lecture 2</td>
<td></td>
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<tr>
<td>Fri</td>
<td>31-January</td>
<td><strong>REVIEW – 1:15-2:30p ONLY</strong></td>
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<tr>
<th>Week 2</th>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Mon</td>
<td>3-February</td>
<td>Lecture 3</td>
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<tr>
<td>Wed</td>
<td>5-February</td>
<td>Lecture 4</td>
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<tr>
<td>Fri</td>
<td>7-February</td>
<td><strong>REVIEW</strong></td>
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<thead>
<tr>
<th>Week 3</th>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Mon</td>
<td>10-February</td>
<td>Lecture 5</td>
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<tr>
<td>Wed</td>
<td>12-February</td>
<td>Lecture 6</td>
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<tr>
<td>Fri</td>
<td>14-February</td>
<td><strong>REVIEW</strong></td>
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<thead>
<tr>
<th>Week 4</th>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Mon</td>
<td>17-Feb</td>
<td>President's Day - NO CLASS</td>
<td></td>
</tr>
<tr>
<td>Wed</td>
<td>19-Feb</td>
<td>Lecture 7</td>
<td></td>
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<tr>
<td>Fri</td>
<td>21-Feb</td>
<td><strong>REVIEW</strong></td>
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<thead>
<tr>
<th>Week 5</th>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Mon</td>
<td>24-Feb</td>
<td>Lecture 8</td>
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<tr>
<td>Wed</td>
<td>26-Feb</td>
<td>Lecture 9</td>
<td></td>
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<tr>
<td>Fri</td>
<td>28-Feb</td>
<td><strong>REVIEW</strong></td>
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<thead>
<tr>
<th>Week 6</th>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Mon</td>
<td>2-March</td>
<td>Lecture 10</td>
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<tr>
<td>Wed</td>
<td>4-March</td>
<td>Lecture 11</td>
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<tr>
<td>Fri</td>
<td>6-Mar</td>
<td><strong>REVIEW</strong></td>
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<thead>
<tr>
<th>Week 7</th>
<th>Mon</th>
<th>9-Mar</th>
<th>Midterm Exam – During class time</th>
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<tbody>
<tr>
<td>Wed</td>
<td>11-Mar</td>
<td>Lecture 12</td>
<td></td>
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<tr>
<td>Fri</td>
<td>13-Mar</td>
<td>No Review (Spring Break begins)</td>
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<tr>
<th>Week 8</th>
<th>Mon</th>
<th>16-Mar</th>
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<tbody>
<tr>
<td>Wed</td>
<td>18-Mar</td>
<td>Spring Break – NO CLASSES</td>
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<tr>
<td>Fri</td>
<td>20-Mar</td>
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<thead>
<tr>
<th>Week 9</th>
<th>Mon</th>
<th>23-Mar</th>
<th>Lecture 13</th>
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<tbody>
<tr>
<td>Wed</td>
<td>25-Mar</td>
<td>Lecture 14</td>
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<tr>
<td>Fri</td>
<td>27-Mar</td>
<td>Lecture 15 – 11:45a-1:00p, L-140</td>
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<tr>
<td>Fri</td>
<td>27-Mar</td>
<td><strong>REVIEW</strong></td>
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<td>Week 10</td>
<td>Mon</td>
<td>30-Mar</td>
<td>Lecture 16</td>
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<tr>
<td>Wed</td>
<td>1-April</td>
<td>No Lecture (rescheduled to March 27th)</td>
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<td></td>
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<td>5th problem set due 10:10am</td>
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<tr>
<td>Fri</td>
<td>3-April</td>
<td>REVIEW</td>
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<tr>
<td>Week 11</td>
<td>Mon</td>
<td>6-Apr</td>
<td>Lecture 17</td>
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<td></td>
<td>Wed</td>
<td>8-Apr</td>
<td>Lecture 18</td>
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<td>6th problem set due 10:10am</td>
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<tr>
<td>Fri</td>
<td>10-Apr</td>
<td>REVIEW</td>
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<tr>
<td>Week 12</td>
<td>Mon</td>
<td>13-Apr</td>
<td>Lecture 19</td>
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<td></td>
<td>Wed</td>
<td>15-Apr</td>
<td>Lecture 20</td>
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<td>7th problem set due 10:10am</td>
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<tr>
<td>Fri</td>
<td>17-Apr</td>
<td>REVIEW</td>
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<tr>
<td>Week 13</td>
<td>Mon</td>
<td>20-Apr</td>
<td>Lecture 21</td>
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<td></td>
<td>Wed</td>
<td>22-Apr</td>
<td>Lecture 22</td>
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<td>8th problem set due 10:10am</td>
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<tr>
<td>Fri</td>
<td>24-Apr</td>
<td>REVIEW</td>
<td></td>
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<tr>
<td>Week 14</td>
<td>Mon</td>
<td>27-Apr</td>
<td>Lecture 23</td>
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<td></td>
<td>Wed</td>
<td>29-Apr</td>
<td>Lecture 24 – 12:30-2:30p in Littauer 150</td>
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<td><em>Combined lecture with DEV-102</em></td>
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<tr>
<td>Fri</td>
<td>1-May</td>
<td>REVIEW (Last day of classes)</td>
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<tr>
<td>Week 15</td>
<td>Fri</td>
<td>8-May</td>
<td>Final Exam – 9am-12n – Location TBD</td>
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Course Outline

The course is divided into two parts. The first part (Lecture 1-16) covers game theory, and the second part (Lecture 17-24) introduces contract theory. Students are highly encouraged to read the textbook chapters and starred (*) readings before or after each class. Sometimes we will focus on particular sections of the journal articles; students will be notified in such cases. Other listed readings are optional and are intended for students who are interested in delving deeper into a particular topic.

The course seeks to give students an overview of important topics in game theory and contract theory. However, some topics may not be covered in the depth that they ought to be. The following lectures touch on topics that are more advanced and/or may be of particular interest to some students (they may be skipped if time doesn’t allow). Materials covered in these lectures would not be tested.

- Lecture 11: Behavioral game theory; learning and evolutionary foundations
- Lecture 22: Incomplete contracts

Note: The list of topics and the pace are subject to change. Students will be notified in advance if that happens.
I. Game Theory

Lecture 1:
- Introduction, Formal Description of Games \( \text{(MWG 7.A-B)} \)
- Playing Games


I.A. Static Games of Complete Information

Lecture 2-3:
- Normal Form Representation \( \text{(G 1.1.A)} \)
- Dominant Strategies, Iterated Elimination \( \text{(G 1.1.B, MWG 8.B)} \)

Lecture 4:
Applications of NE:
- Cournot Competition \( \text{(G 1.2.A, MWG 12.C)} \)
- Bertrand Competition \( \text{(G 1.2.B, MWG 12.C)} \)
- Tragedy of the Commons \( \text{(G 1.2.D)} \)


Lecture 5:
- Mixed Strategies \( \text{(G 1.3.A)} \)

Lecture 6:
Recap and Further Applications:
- Corruption and Norms
- Development Traps and Coordination Games


I.B. Dynamic Games of Complete Information

Lecture 7-8:
- Perfect Information Games, Backward Induction (G 2.1.A)
- Extensive & Normal Form Representation (G 2.4.A, MWG 7.C-D)
- Application: Stackelberg Competition (G 2.1.B)
- Application: Bank Runs (G 2.2.B)


Lecture 9-10:
- Repeated Games (G 2.3.A, MWG 12.D)
- Infinitely Repeated Games, SDP, Folk Theorem (G 2.3.B&Appendix, MWG 12.Appendix A)
- Application: Implicit Cartels (G 2.3 C)


Lecture 11:
- Mid-term Review

Midterm (during class time) – Monday, March 9th – Littauer 140

Lecture 12:
- A Brief Introduction to Experimental/Behavioral Game Theory
- Learning and Evolutionary Foundations


I.C. Games of Incomplete Information & Information Economics

Lecture 13:
- Introduction to Information Economics (S 1, MWG 13.A)
- Akerlof’s Lemon Model, Signals of Quality (MWG 13.B)


Lecture 14-15
- Signaling Games (G 4.2.A)
- Perfect Bayesian Equilibrium (G 4.1, MWG 9.C)

Lecture 16:
- Job Market Signaling (G4.2.B, S 4.2, MWG 13.C)


I.D. Adverse Selection and Self-Selection Contracts

Lecture 17-18:
- Principal-Agent framework (S 1, MWG 13.A, 14.A)
- Adverse Selection (S 2.1-2.2)
- Screening, Monopolistic Pricing (MWG 14.C)


Lecture 19:
- Application: A Model of Red-Tape

I.E. Moral Hazard and Incentive Contracts

Lecture 20:
• Moral Hazard \( (S \ 5.1-2, \ MWG \ 14.B) \)

Lecture 21:
• Application: Share-cropping


I.F. Incomplete Contracts, Applications and Final Review

Lecture 22:
• Incomplete Contracts \( (S \ 7.1) \)
• Application: Scope of Government \( (S \ 6.1, \ 6.4.5, \ 6.5 \ conclusion \ only) \)


Lecture 23:
• Final Review

Lecture 24:
• Students’ topics – combined lecture with DEV 102

Final Exam (9a-12n) – Friday, May 8th – Location TBD