Advanced Microeconomic Policy Analysis II
API-110
Course Syllabus

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Office Hours: Mondays, 3:30 PM – 5:30 PM
You can sign up for office hours online at 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 Lisa for a different time.

Teaching Fellow: Elizabeth Spink
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Course Assistants:
Daniela Paz
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Office Hours: TBD

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 instructor and only under exceptional circumstances.

Class Meetings and Review Sessions:
The course meets twice per week for lecture:
- Monday and Wednesday, 1:15pm-2:30pm
- Room: Wexner 436

There will be two review sessions (students only need to attend one) offered on Fridays by the Teaching Fellow:
- Review Section 1: Friday 1:15 PM – 2:30 PM in L-140
- Review Section 2: Friday 2:45 PM – 4:00 PM in L-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 me for more advanced questions.
**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 given in class on **Wednesday, March 13th, 2019** and the final examination is scheduled for **Friday, May 10th, 2019** from 2PM-5PM.

**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 me, you must submit completed problem sets in hardcopy to the course dropbox by **1pm 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 6, 2019 (Wednesday)
- Problem Set 2: February 13, 2019 (Wednesday)
- Problem Set 3: February 20, 2019 (Wednesday)
- Problem Set 4: March 6, 2019 (Wednesday)
- Problem Set 5: April 3, 2019 (Wednesday)
- Problem Set 6: April 10, 2019 (Wednesday)
- Problem Set 7: April 17, 2019 (Wednesday)
- Problem Set 8: April 26, 2019 (Friday)

**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 placed at the HKS library reserve:

*Theory:*
- Fudenberg, Drew *Game Theory* 1991
- Kreps, David *Game Theory and Economic Modeling* 1990
- Hart, O. *Firms, Contracts and Financial Structure* 1995
Spring Schedule 2019

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<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
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<td>Week 1</td>
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<tr>
<td>Mon</td>
<td>28-January</td>
<td>Lecture 1</td>
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<td>Wed</td>
<td>30-January</td>
<td>Lecture 2</td>
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<td>Fri</td>
<td>1-Feb</td>
<td>REVIEW</td>
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<td>Week 2</td>
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<td>Mon</td>
<td>4-February</td>
<td>Lecture 3</td>
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<td>Wed</td>
<td>6-February</td>
<td>Lecture 4</td>
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<tr>
<td>Fri</td>
<td>8-February</td>
<td>REVIEW</td>
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<td>Week 3</td>
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<td>Mon</td>
<td>11-February</td>
<td>Lecture 5</td>
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<td>Wed</td>
<td>13-February</td>
<td>Lecture 6</td>
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<td>Fri</td>
<td>15-February</td>
<td>REVIEW</td>
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<td>President's Day 2017- NO CLASS</td>
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<td>Mon</td>
<td>18-Feb</td>
<td>Lecture 7</td>
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<td>Wed</td>
<td>20-Feb</td>
<td>Lecture 7</td>
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<td>Fri</td>
<td>22-Feb</td>
<td>REVIEW</td>
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<td>Week 4</td>
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<td>Mon</td>
<td>25-Feb</td>
<td>Lecture 8</td>
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<td>Wed</td>
<td>27-Feb</td>
<td>Lecture 9</td>
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<td>Fri</td>
<td>1-March</td>
<td>REVIEW (COMBINED SESSION, 2:45-4 PM, LAND HALL)</td>
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<td>Week 5</td>
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<td>Mon</td>
<td>4-March</td>
<td>Lecture 10</td>
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<td>Wed</td>
<td>6-March</td>
<td>Lecture 11</td>
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<td>Week</td>
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<td>Week 7</td>
<td>Fri 8-Mar</td>
<td>REVIEW</td>
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<td>Mon 11-Mar</td>
<td>Lecture 12</td>
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<td>Wed 13-Mar</td>
<td>Midterm Exam</td>
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<td>Fri 15-Mar</td>
<td>No Review (Spring recess begins)</td>
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<td>Week 8</td>
<td>Mon 18-Mar</td>
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<td>Wed 20-Mar</td>
<td>HOLIDAY: Spring Break</td>
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<td>Fri 22-Mar</td>
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<td>Week 9</td>
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<td>Lecture 13</td>
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<td>Wed 27-Mar</td>
<td>Lecture 14</td>
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<td>Fri 29-Mar</td>
<td>REVIEW</td>
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<td>Week 10</td>
<td>Mon 1-Apr</td>
<td>Lecture 15</td>
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<td>Wed 3-Apr</td>
<td>Lecture 16</td>
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<td>Fri 5-Apr</td>
<td>REVIEW</td>
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<td>Week 11</td>
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<td>Lecture 17</td>
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<td>Wed 10-Apr</td>
<td>Lecture 18</td>
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<td>Fri 12-Apr</td>
<td>REVIEW</td>
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<td>Week 12</td>
<td>Mon 15-Apr</td>
<td>Lecture 19</td>
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<td>Wed 17-Apr</td>
<td>Lecture 20</td>
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<td>Fri 19-Apr</td>
<td>REVIEW</td>
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<td>Week 13</td>
<td>Mon 22-Apr</td>
<td>Lecture 21</td>
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<td>Wed 24-Apr</td>
<td>Lecture 22</td>
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<td>Fri 26-Apr</td>
<td>REVIEW</td>
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<td>Week 14</td>
<td>Mon 29-Apr</td>
<td>Lecture 23</td>
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<td>Wed 1-May</td>
<td>Lecture 24 (combined with DEV-102)</td>
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<td>Fri 3-May</td>
<td>REVIEW (Last day of classes)</td>
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<td>Week 15</td>
<td>Fri 10-May</td>
<td>Final Exam – 2pm-5pm</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 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 \( (MWG \, 7.A-B) \)
- Playing Games


I.A. Static Games of Complete Information

Lecture 2-3:
- Normal Form Representation \( (G \, 1.1.A) \)
- Dominant Strategies, Iterated Elimination \( (G \, 1.1.B, MWG \, 8.B) \)
- Nash Equilibrium \( (G \, 1.1.C, Appendix \, 1.1.C, MWG \, 8.D) \)

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


Lecture 5:
- Mixed Strategies \( (G \, 1.3.A) \)
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: Stackleberg 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:
- A Brief Introduction to Experimental/Behavioral Game Theory
- Learning and Evolutionary Foundations


Lecture 12:

- Mid-term Review

Midterm (in class) – March 7th (Wednesday)

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

Lectures 22:
- Incomplete Contracts \((S 7.1)\)
- Application: Scope of Government \((S 6.1, 6.4.5, 6.5 \text{ conclusion only})\)


Lecture 23:
- Final Review

Lecture 24: Applications to Development (Combined with DEV-102)
- Student Topics