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Spring 2023

Harvard Kennedy School
Harvard University

Advanced Microeconomic Policy Analysis II
API-110
Course Syllabus

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Office Hours:
TBD (see Canvas for most updated details)

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 Jie for a different time.

Teaching Fellow:

Henry Rounds	henryrounds@hks.harvard.edu **Office Hours:** TBD (see Canvas for most updated details)

Course Assistants:

Shivani Gupta	shivanigupta@hks.harvard.edu **Office Hours:** TBD (see Canvas for most updated details)
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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.

Instructor:
This course is taught by Professor Jie Bai.

Class Meetings and Review Sessions:
The course meets twice per week for lecture:

- Monday and Wednesday, 10:30a – 11:45a ET
- Location: Wexner 436

There will also be a weekly review session offered by the Teaching Fellow; these sessions are identical:

- Friday, 01:30p – 02:45p ET in Littauer 140 **or** 3:00p – 4:15p ET in Starr Auditorium

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.

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	20%
Midterm	30%
Final	50%

Examinations:
There will be a midterm examination on **Monday, March 6th** during class time and the final examination is scheduled for **Monday, May 8th from 09:00a – 12:00p**.

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 instructor, you must submit completed problem sets to Canvas prior to 10:00am on the due date. You can either upload pdfs of typed solutions or pictures of handwritten solutions. 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.

Problem Set Due Dates:

- Problem Set 1: Wednesday, February 1st
- Problem Set 2: Wednesday, February 8th
- Problem Set 3: Wednesday, February 22nd
- Problem Set 4: Wednesday, March 1st
- Problem Set 5: Wednesday, March 29th
- Problem Set 6: Wednesday, April 5th
- Problem Set 7: Wednesday, April 12th
- Problem Set 8: Wednesday, April 19th

Readings:

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

- *Game Theory for Applied Economists* by Robert Gibbons (G), Princeton University Press, 1992.
- *The Economics of Contracts* by Bernard Salanie (S), MIT Press, 2nd edition, 2017.

We are working with the Office of Course Materials to make the required texts available in a digital format. We will also assign a set of selected academic papers to read. Readings from academic journals can be accessed on the course website (Canvas) or through the Harvard Library. Any additional readings and supplementary notes will be posted to 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
- Ray, Debraj. *Development Economics* 1998
- Bardhan, P and C. Udry. *Development Microeconomics* 1999
- Meier, G and Stiglitz. *Frontier of Development Economics: The Future in Perspective* 2001

Credits:

This course draws on materials from previous API-110 course taught by Asim Khwaja and materials that Jie was 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 2023

Week	Day	Date	Topic
Week 1	Mon	23-Jan	Lecture 1
	Wed	25-Jan	Lecture 2
Week 2	Mon	30-Jan	Lecture 3
	Wed	01-Feb	Lecture 4
			Problem Set 1 due @ 10:00 AM ET
Week 3	Mon	06-Feb	Lecture 5
	Wed	08-Feb	Lecture 6
			Problem Set 2 due @ 10:00 AM ET
Week 4	Mon	13-Feb	Lecture 7
	Wed	15-Feb	Lecture 8
Week 5	**Mon**	**20-Feb**	**No class (Presidents Day)**
	Wed	22-Feb	Lecture 9
			Problem Set 3 due @ 10:00 AM ET
Week 6	Mon	27-Feb	Lecture 10
	Wed	1-Mar	Lecture 11
			Problem Set 4 due @ 10:00 AM ET
Week 7	**Mon**	**6-Mar**	**Midterm Exam (in class)**
	Wed	8-Mar	Lecture 12
Week 8	**Mon**	**13-Mar**	**No class (Spring Break)**
	Wed	**15-Mar**	**No class (Spring Break)**
Week 9	Mon	20-Mar	Lecture 13
	Wed	22-Mar	Lecture 14
Week 10	Mon	27-Mar	Lecture 15
	Wed	29-Mar	Lecture 16
			Problem Set 5 due @ 10:00 AM ET
Week 11	Mon	3-Apr	Lecture 17
	Wed	5-Apr	Lecture 18
			Problem Set 6 due @ 10:00 AM ET
Week 12	Mon	10-Apr	Lecture 19
	Wed	12-Apr	Lecture 20
			Problem Set 7 due @ 10:00 AM ET
Week 13	Mon	17-Apr	Lecture 21
	Wed	19-Apr	Lecture 22
			Problem Set 8 due @ 10:00 AM ET
Week 14	Mon	24-Apr	Lecture 23
	Wed	26-Apr	Lecture 24
Week 15	-	-	-
Week 16	**Mon**	**8-May**	**Final Exam (09:00a – 12:00p ET)**

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 12: Behavioral game theory
- Lecture 23: 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

Aumann, R.J., 2008. "Game Theory." *The New Palgrave Dictionary of Economics*, 2nd Edition.

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)*

*Burgess, R., Hansen, M., Olken, B.A., Potapov, P. and Sieber, S., 2012. "The Political Economy of Deforestation in the Tropics." *The Quarterly Journal of Economics*, *127*(4), pp.1707-1754.

Bergquist, L.F. and Dinerstein, M., 2020. Competition and entry in agricultural markets: Experimental evidence from Kenya. *American Economic Review*, *110*(12), pp.3705-47.

*Hardin, G., 1968. "The Tragedy of the Commons." *Science* 162: 1243-48.

Ostrom, E., 1999. "Coping with Tragedies of the commons." *Annual Review of Political Science*, *2*(1), pp.493-535.

Kreindler, G.E., 2018. The welfare effect of road congestion pricing: Experimental evidence and equilibrium implications.

Lecture 5:

- Mixed Strategies *(G 1.3.A)*

Lecture 6:

Recap and Further Applications:

- Corruption and Norms
- Development Traps and Coordination Games

Fisman, R. and Miguel, E., 2007. "Corruption, Norms, and Legal Enforcement: Evidence From Diplomatic Parking Tickets." *Journal of Political Economy*, *115*(6), pp.1020-1048.

*Murphy, K.M., Shleifer, A. and Vishny, R.W., 1989. "Industrialization and the Big Push." *Journal of Political Economy*, *97*(5), pp.1003-1026.

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)*
- Subgame Perfect Nash Equilibrium (SPNE) *(G 2.2 A, G 2.4.B, MWG 9.A-B)*
- Application: Stackleberg Competition *(G 2.1.B)*
- Application: Bank Runs *(G 2.2.B)*

*Diamond, D. and Dybvig, P., 1983. "Bank Runs, Deposit Insurance, and Liquidity." *Journal of Political Economy*, Vol. 91, No. 3., p. 401-419.

Lecture 9-10:

- Repeated Games *(G 2.3.A, MWG 12.D)*
- Infinitely Repeated Games, Folk Theorem *(G 2.3.B&Appendix, MWG 12.Appendix A)*
- Applications: Implicit Cartels ; Relational Contract *(G 2.3 C)*

Green, Edward J and Robert H. Porter, 1984. "Noncooperative Collusion Under Imperfect Price Information." *Econometrica*, Vol. 52, No. 1, pp. 87-100.

Greif, A., 1993. Contract enforceability and economic institutions in early trade: The Maghribi traders' coalition. *The American economic review*, pp.525-548.

*Davies, E. and Fafchamps, M., 2017. *When No Bad Deed Goes Punished: Relational Contracting in Ghana versus the UK* (No. w23123). National Bureau of Economic Research.

Lecture 11:

- Catch up and midterm review

Midterm (during class time) – Monday, March 6th

Lecture 12:

- A Brief Introduction to Experimental/Behavioral Game Theory
- Taking Stock and Midterm review

Camerer, C., 1997. "Progress in Behavioral Game Theory." *Journal of Economic Perspectives*, Vol. 11, No. 4. p. 167-188.

Rabin, M., 1993. "Incorporating Fairness into Game Theory and Economics." *American Economic Review*, Vol. 83, No. 5, p. 1281-1302.

Kandori, M., G. Mailath, and R. Rob., 1993. "Learning, Mutation, and Long-Run Equilibria in Games." *Econometrica*, 61, 29-56.

Ellison, G., 1993. "Learning, Local Interaction and Coordination." *Econometrica*, 61, 1047-1071.

I.C. Games of Incomplete Information & Information Economics

Lecture 12:

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

Stigler, G.J., 1961. The Economics of Information. *Journal of Political Economy*, *69*(3), pp.213-225.

*Akerlof, G., 1970. "The Market for "Lemons": Quality Uncertainty and the Market Mechanism." *Quarterly Journal of Economics*, Vol. 84, No. 3. p. 488-500.

Nelson, P., 1974. "Advertising as Information." *Journal of Political Economy*, *82*(4), pp.729-754.

Bai, J., 2016. Melons as Lemons: Asymmetric Information, Consumer Learning and Seller Reputation.

Lecture 13-15:

- 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)*

*Spence, M., 1973. "Job Market Signaling." *The Quarterly Journal of Economics*, *87*(3), pp.355-374.

Tyler, J.H., Murnane, R.J. and Willett, J.B., 2000. Estimating the labor market signaling value of the GED. *The Quarterly Journal of Economics*, *115*(2), pp.431-468.

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)*

Stiglitz, J and Weiss, A. 1981. "Credit Rationing in Markets with Imperfect Information," *American Economic Review*, Vol. 71, No. 3, p. 393-410.

Stiglitz, J.E., 1975. "The Theory of "Screening," Education, and the Distribution of Income." *The American Economic Review*, *65*(3), pp.283-300.

Stiglitz, J.E., 1977. "Monopoly, Non-linear Pricing and Imperfect Information: the Insurance Market." *The Review of Economic Studies*, pp.407-430.

Mirrlees, J.A., 1971. "An Exploration in the Theory of Optimum Income Taxation." *The Review of Economic Studies*, *38*(2), pp.175-208.

Lecture 19:

- Application: A Model of Red-Tape

*Banerjee, A., 1997. "A Theory of Misgovernance," *Quarterly Journal of Economics*, Vol. 112(4), p. 1289-1332.

I.E. Moral Hazard and Incentive Contracts

Lecture 20-21:

- Moral Hazard *(S 5.1-2, MWG 14.B)*

Lecture 22:

- Application: Sharecropping

Banerjee, A.V., Gertler, P.J. and Ghatak, M., 2002. "Empowerment and Efficiency: Tenancy Reform in West Bengal." *Journal of Political Economy*, *110*(2), pp.239-280.

Foster, A and M. Rosenzweig, 1994. "A Test for Moral Hazard in the Labor Market: Contractual Arrangements, Efficiency and Health," *Review of Economics and Statistics*, Vol. 76, pp. 213-27.

I.F. Incomplete Contracts, Applications and Final Review

Lecture 23:

- Incomplete Contracts *(S 7.1)*
- Application: Scope of Government *(S 6.1, 6.4.5, 6.5 conclusion only)*

*Hart, O., Shleifer, A. and Vishny, R.W., 1997. "The Proper Scope of Government: Theory and an Application to Prisons." *The Quarterly Journal of Economics*, *112*(4), pp.1127-1161.

Besley, T and Ghatak, M 2001. "Government versus Private Ownership of Public Goods," *Quarterly Journal of Economics*, Vol. 116, No. 4, p.1343 – 1372.

Lecture 24:

- Final Review and Students' topics

Final Exam (09:00a – 12:00p ET) – Monday, May 8th