Joel Sobel
Spring 2010

Economics 200C: Games and Information

Objectives: Econ 200C is the final course in the micro core. It is a course on game theory and information economics.

Organization: The class meets Mondays and Wednesday from 8:30-10:20.

Texts and Readings:

- Binmore, *Fun and Games*

- Dixit and Skeath, *Games of Strategy*

- Fudenberg and Tirole, *Game Theory*

- Gibbons, *Game Theory for Applied Economists*

- Gibbons, "An Introduction to Applicable Game Theory," *Journal of Econonomic Perspectives*, Winter 1997, vol. 11, 1, 127–49.

- Kreps, *A Course in Microeconomic Theory*

- Hart and Holmström, "The Theory of Contracts," in Advances in Economic Theory, Fifth World Congress, edited by T. Bewley, New York: Cambridge, 1987.

- Mas-Colell, Whinston, and Green, *Microeconomic Theory*

- McMillan, *Games, Strategies, and Managers*

- Milgrom, *Putting Auction Theory to Work*

- Osborne and Rubinstein, *Game Theory*

- Varian, *Microeconomic Analysis*

- Watson, *Strategy*

The list is in alphabetical order and is not comprehensive (talk to me for more suggestions).

You are familiar with Kreps, Mas-Colell, Whinston, and Green, and Varian. Between them, these texts cover the essential material of this course. Students who care only about completing this course and the micro qual need not go beyond the three of these books. If you used only one of these texts as a primary reference for 200A and B, then it will probably be adequate to continue to do so (although Varian's coverage of the topics in this course is somewhat thin). In my opinion Mas-Colell, Whinston, and Green supplies the best coverage of the material in the class.

Fudenberg and Tirole, Gibbons, and Osborne and Rubinstein are game theory texts. Fudenberg and Tirole is comprehensive and difficult. Gibbons's book is elementary and mechanical. [The article written by Gibbons ("An Introduction to Applicable Game Theory," *Journal of Econonomic Perspectives*, Winter

1997) is a good substitute for his text.] Osborne and Rubinstein is terse, somewhat philosophical, but closer in level to Fudenberg and Tirole than to Gibbons. I imagine that students who like Mas-Colell, Whinston, and Green will like Fudenberg and Tirole; students who like Varian will like Gibbons; and students who like Kreps will like Osborne and Rubinstein.

Binmore's book is, for the most part, mathematically elementary, but it is conceptually challenging. It contains topics that are not standard for an economics class. McMillan's book is a non-technical introduction to strategic analysis. It contains some interesting commentaries. Dixit and Skeath and Watson are good upper-division undergraduate textbooks. These four books probably won't help you understand lectures, give insight into solving problems, or help you pass the qualifier, but they may provide general insight and appreciation of game theory and its applications.

Hart and Holmström is a good (but old) survey on the literature on contracting. Milgrom's book is a fairly accessible exposition of a leading application of the theory of mechanism design.

I treat Mas-Colell, Whinston, and Green as the main text for the class. You need not consult any other source to follow the lectures and master the material for exams. If you are enthusiastic about the material, come to me and I'll supply further readings.

What the Class is About: The first half of the class is an introduction to non-cooperative game theory. It contains many definitions and a few basic results. The second half of the class introduces several microeconomic models using incomplete information.

How to Study: I recommend that you read the textbook coverage prior to the lecture. Doing so gives you a context in which to place the lecture material, it may generate questions to ask, and it should give you the confidence to listen to the lecture (rather than just write it down).

I will try to post lecture "slides" following each lecture. In the past I have been reluctant to teach using prepared slides (because it makes it too easy to go too fast). I encourage you to use these resources as an excuse to take fewer notes (and listen and think more) during class.

Leaving the classroom with a sense that you have understood the lecture is a weak sign that you understand the material. You must work problems. Do this seriously. Write down your answers with care. Talk about them with classmates, me, or the TA. Try to vary the assumptions in the main results of the class or in assigned problems. The most successful students should be able to write good problems (and answer them).

Exercises: The texts have problems. I will make available some of my old problems and solutions. It would be sensible to use old qualifying exams as a source of questions.

Requirements and Grading: I will base your grade on a midterm examination (35%), a final examination (55%) and homework (10%). Active (and positive) participation in class will serve to break ties (in your favor). I encourage you to collaborate on homework assignments (but to write down your own answers). Both exams will be in class. The midterm should cover the first half of the class. It is tentatively scheduled for May 3. The final is officially scheduled for 8-11 (AM) on Friday, June 11. Both of these dates are tentative.

Office Hours: I encourage you to talk to me about course material. I propose to have office hours immediately after class. Other times are possible with advanced warning. Philip Neary (pneary@ucsd.edu) will be the TA for the class. He will have office hours on Fridays from 2:30 until 4.

Topics: Here is a tentative list of topics for the course. (If you are eager enough to follow Fudenberg and Tirole's book, then you should be able to identify the appropriate parts of the text.) Allow approximately two class meetings per topic.

Topic	Kreps	MWG	V	OR	Other
Game Theory Basics	355–84	217–33	259–65	1–7	
Static Games	387–416	235–53	265–8	11–63	
Dynamic Games	417–49	267–82	273–8	89–113	
Infinite Games	503–15; 556–65	298–9; 400–5	269–71	117–30; 133–59	
Incomplete Information	463–89	253–7; 282–96	279–325	199–216; 219–253	
Adverse Selection	625–29	436–50	468–9		Akerlof (in DR)
Signaling and Screening	629–50	450–67	469–71		Spence (in DR)
Agency	577–614	477–506	441–66	91–129	Hart-Holmström
Mechanisms	661–703	897–910	133–59		