

Joel Sobel
Spring 2004

Economics 200C: Games and Information

Objectives: Econ 200C is the final course in the micro core. It is my hope that everyone will be able to answer the questions that I'll write for June's micro qual. For those of you who plan to study or use microeconomics in the future, I will introduce the basic ideas of multi-person decision theory.

Organization: The class is scheduled to meet MWF from 10:30-12:30. I plan to use roughly four hours each week. I scheduled the extra session for flexibility. (Micro faculty have been especially frail this year.) I will give warning about when the class will meet.

Texts: Below is a long, but not comprehensive, list of possible texts.

- Diamond and Rothschild, *Uncertainty in Economics*
- Fudenberg and Tirole, *Game Theory*
- Gibbons, *Game Theory for Applied Economists*
- Kreps, *A Course in Microeconomic Theory*
- Mas-Colell, Whinston, and Green, *Microeconomic Theory*
- McMillan, *Games, Strategies, and Managers*
- Osborne and Rubinstein, *Game Theory*
- Varian, *Microeconomic Analysis*

I also refer to two articles in the reading list below:

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

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

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 Economic 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. [Please tell me if I am wrong.] Diamond and Rothschild is a

collection of classic articles from the sixties and seventies. McMillan's book is a non-technical introduction to strategic analysis. It contains some interesting commentaries.

I have deliberately make the list of reference to a small number of books and articles. The texts are enough to learn the basic material. I hope that some of you wish to go beyond the basic material. There are many other good things to read. The texts mention them. I know them. If you wish to go beyond the course material, then ask me for references.

Mas-Colell, Whinston, and Green, McMillan, and Osborne and Rubinstein should be available at the bookstore. All of the texts listed above should be available on reserve in Sequoia 244.

What the Class is About: This class begins with an introduction to non-cooperative game theory and ends with a study of several important strategic settings in which incomplete information plays a critical role. The first couple of weeks is heavy on definitions; the last half has many models. Unlike 200B, this is not a course defined by its "fundamental" theorems. Instead, I hope to introduce you to an area of study, a way of posing problems, and show you techniques for solving the problems.

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; may generate questions to ask; and should give you the confidence to listen to the lecture (rather than just write it down). Leaving the classroom with a sense that you have understood the lecture is only 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 me or classmates. 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).

Requirements: I will base your grade on a midterm examination (35%), homework (10%), and a final examination (55%).

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.

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	Gibbons
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		