Joel Sobel
Spring 2012

**Economics 200C-Part 1: Games and Information**

**Description:** Econ 200C is the final course in the micro core. I will teach the first half of the class. David Miller will teach the last five weeks. My half of the class will cover a dynamic games, games with incomplete information, and applications.

**Objectives:** The class has three different goals. First, some students hope to pass the micro qual and get on with their lives. I want to identify the tools and concepts you must master to pass the qualifying exam. Second, the class introduces ideas that a well educated economist should know, both to show that one is an educated economist and to be able to use microeconomics in applications. Third, I want to stimulate (or at least not deaden) the enthusiasm of the small subset of students who might do research in microeconomic theory.

**Organization:** The class meets Mondays and Wednesday from 9:30-11:20, with two exceptions. Class will not meet on Wednesday April 11 and Wednesday 25. Instead there will be replacement classes on Friday April 6 and Friday April 27. The replacement classes will meet from 9:40-11:30 in Econ 300. There will be an examination on Wednesday May 2 in class.

**Possible References:**

- 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 Economic Perspectives*, Winter 1997, vol. 11, 1, 127–49.
- Kreps, *A Course in Microeconomic Theory*
- Mailath and Samuelson, *Repeated Games and Reputations: Long-Run Relationships*
- Mas-Colell, Whinston, and Green, *Microeconomic Theory*
- McMillan, *Games, Strategies, and Managers*
- Osborne and Rubinstein, *Game Theory*
- Varian, *Microeconomic Analysis*
- Watson, *Strategy*

In addition to this list, the website contains lecture notes written by Nageeb Ali and Navin Kartik. 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). 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.

Mailath and Samuelson is a book-length treatment that covers relatively recent contributions to the area of repeated games. It goes far beyond the material that I will present on repeated games. Only for those who want more.

I treat Mas-Colell, Whinston, and Green as the main text for the class. You need not consult any other text to prepare for the qualifying exam but I will cover some topics (especially in the first week) that go beyond the basic texts. For the most part, I will follow MGW in spirit, but will present material that is not in the text (and direct you to sources that supplement the lecture). If you are enthusiastic about the material, come to me and I'll supply further readings.

**What the Class is About:** The class introduces extends the basic results from repeated games that you saw in 200B, introduces games with incomplete information and describes several canonical models of microeconomic models (signaling, screening, and adverse selection) that use 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" prior each lecture. My experience is that prepared slides create an illusion of effective instruction (it makes it easy to display vast quantities of information). I encourage you to use these resources as an excuse to take fewer notes (and listen and think more) during class. I plan to update slides (with corrections and to correspond to the actual lecture).

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.

Even better than working problems is posing them. If you can think up good questions for the class, then you are ready to teach the class. If you can think up good questions and answer them, you are ready to write your thesis.

**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.

I hope to point you to more problems than you can do. I will give subjective ratings to indicate how difficulty and relevance. The TA will grade a randomly selected subset of problems. You are welcome to work in groups (no more than four people per group). If you wish to receive comments on a specific question, please note this on your assignment.[1]

Past classes have failed to learn how to write satisfactory answers. There are many explanations for this (including bad teaching or poor feedback), but ultimately you suffer if you do not learn how to provide adequate answers. Take advantage of the exercises to make sure your answers are correct.

**Requirements and Grading:** I will base your grade for my half of the class on a midterm examination (40%) 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). The final grade for the class will be a simple average of the grades for the first two parts.

**Office Hours:** I encourage you to talk to me about course material. I propose to have office hours immediately after class. (I may need to modify these times.) Other times are possible with advanced warning. My office is 311 Econ. My email address is jsobel@ucsd.edu.

Kristy Buzard is the TA for the class. Her office is 123 Econ. Her email address in kbuzard@ucsd.edu. She will have an office hour on Thursday from 11 until 12. She will be available for additional consultation either in supplementary office hours or (not-yet-schedule) sections.

**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. (I can count. Four topics times two classes per topic plus one date for an exam leaves one class period. Don't worry, there will be something to talk about.)

| Topic | Kreps | MWG | V | OR |
|---|---|---|---|---|
| Repeated Games | 503–15 | 299–300; 400–5 | 269–71 | 117–30; 133–59 |
| Incomplete Information | 463–89 | 253–7; 282–96 | 279–312 | 199–216; 219–253 |
| Adverse Selection | 625–29 | 436–50 | 468–9 | |
| Signaling and Screening | 629–50 | 450–67 | 469–71 | |

[1]We will try to honor this request, but only the randomly selected graded questions will count towards you grade.