Joel Sobel
Fall 2007

**Economics 208: Games and Information**

**General:**

This course will meet on Monday and Wednesday from 11:00 to 12:50 in 304 Economics. A typical quarter course meets for 30 hours. We will meet for at least fifteen two-hour sessions. There will be no class on Wednesday, October 10, Wednesday, October 31, and Monday, November 12. I will have office hours Monday after class in 311 Economics.

**Contact information:**

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web page for class material:

http://www.econ.ucsd.edu/%7Ejsobel/208f07/208f07home.htm

**Prerequisites and Expectations**

The class is an advanced introduction to game theory. I will assume familiarity with the basic concepts (obtained from Econ 200C, for example).

The material is theoretical. 200C should be sufficient background in microeconomics. Mathematical sophistication at least at the level of an intermediate undergraduate analysis course (Math 140) would be valuable.

The course should provide a deeper introduction to game theory than provided in the core; give students interested in working in topics that use game theory sufficient experience with basic ideas to follow game theoretic arguments in the literature, identify slimy modeling techniques, and solve their own games; and cover enough work at the "frontier" to suggest possible research problems.

The lectures will introduce important concepts and illustrate the most important proof techniques. Students will not master the material without working (hard) on (hard) problems.

**Requirements and Grading:** I want students to come to class prepared and participate by asking questions. I will suggest problems and expect students to write up answers. In addition, I want students to do at least one of the following: make a class presentation, write a short research paper, and take a final examination.

After negotiating with you, I will decide upon the precise requirements and describe how I will determine grades. My goal is to create the appropriate incentives to induce you to work hard enough to master the material and, for those of you interested in doing research in game theory, get a start on a research question.

**Books**

1. (FT) D. Fudenberg and J. Tirole, **Game Theory**, MIT, 1991.
2. (K) V. Krishna, **Auction Theory**, Academic Press, 2002
3. (MS) G. Mailath and L. Samuelson, **Repeated Games and Reputations**, Oxford, 2006.
4. (M) P. Milgrom, **Putting Auction Theory To Work**, Cambridge, 2004.
5. (OR) M. Osborne and A. Rubinstein, **A Course in Game Theory**, MIT, 1994.

(FT) is a standard reference for a course like this and (OR) is a useful substitute. (MS) is a nice treatment of dynamic games and will probably be a useful book reference for Nageeb Ali's course later in the year. (K) and (MS) books are good references on auction theory, which will be the topic of the last part of the class.

**Topics and Readings**

The listing below provides a rough guide to the order of topics and the basic reading. I find course outlines with comprehensive reference lists intimidating. I will indicate both seminal articles and references on the frontier of research as the course progresses.

1. Predictions
   (a) Dominance and Rationalizability
   (FT) Chapter 1.1, 2.1
   (OR) Chapter 4
   (b) Nash Equilibrium and Its Properties
   (FT) Chapter 1.2, 1.3
   (OR) Chapter 2
   (c) Correlated Equilibrium
   (FT) Chapter 2.2
   (OR) Chapter 3.1, 3.3
2. Higher Order Beliefs and Common Knowledge
   (FT) Chapter 14
   (OR) Chapter 5
3. Communication and Signaling
   (FT) Chapters 8, 11.1
   (OR) Chapter 12.5

4. Dynamic and Repeated Games

   (a) Introduction
   (FT) Chapter 3
   (OR) Chapter 6

   (b) Folk Theorems
   (FT) Chapter 4.3, 5.1-3
   (OR) Chapter 8
   (MS) Chapters 1-5

   (c) Bargaining
   (FT) Chapter 4.4
   (OR) Chapter 7

   (d) Reputation
   (FT) Chapter 9
   (MS) Chapters 15-18

5. Auctions and Mechanism Design

   (a) Positive Analysis of Auctions and Revenue Equivalence
   (FT) Chapter 7
   (K) Chapters 1-3
   (M) Chapters 2-3

   (b) Optimal Auctions
   (K) Chapter 5

   (c) Multi-Unit Auctions
   (K) Chapters 12-14
   (M) Chapter 7