

Econ 644: Game Theory – Spring 2012

Mondays, 1/23 - 4/30, 6:00pm - 8:45pm
Saturdays, 2/4 & 3/31, 10:45am - 1:30pm

Instructor

Matthew Chesnes

Email: mchesnes@ftc.gov

Course Webpage: <http://www.chesnes.com/teaching/ec644/index.html>

Problem sets, announcements, and lecture notes will be posted on the website. Once announcements are posted, I will consider students to be aware of them. For this reason, I urge students to frequently visit the course website.

Required Text

The required textbook for this course is

Robert Gibbons, *Game Theory for Applied Economists*, Princeton University Press, 1992. This is available in paperback. I placed an order with the JHU bookstore, or you can procure a copy through any alternative bookseller, such as, Amazon:

<http://www.amazon.com/Theory-Applied-Economists-Robert-Gibbons/dp/0691003955>

or Barnes and Noble:

<http://search.barnesandnoble.com/Game-Theory-for-Applied-Economists/Robert-Gibbons/e/9780691003955>

Additional references are posted below.

Course Description

Most real-world decisions are not made in isolation, but involve interaction with others. This course studies the competitive and cooperative behavior that results when several parties with conflicting interests must work together. We will learn how to use game theory to formally study situations of potential conflict: situations where the eventual outcome depends not just on your decision and chance, but the actions of others as well. Applications are drawn from economics, business, and political science. Typically there will be no clear-cut "answers" to these problems (unlike most single-person decisions). Our analysis can only suggest what issues are important and provide guidelines for appropriate behavior in certain situations. (Peter Cramton, University of Maryland)

Prerequisites

Microeconomic Theory and Policy (440.601) is required of all students. I will use calculus freely during the semester. Based on my experience, some students may find this course difficult because of its quantitative nature.

Grading

Your grade will be determined as a weighted average of problem sets and exams with the following weights:

Problem Sets:	20%
Midterm Exam:	30%
Final Exam:	50%

Letter grades will be determined according to a standard scale (A: 90% and above, B: 80 to 90, C: 70 to 80, D: 60 to 70, F: below 60). There is **NO** extra credit.

Problem Sets: There will be six graded problem sets. Due dates will be posted on the website. The problem set portion of your grade will be based on your five highest scores. You will **not** receive credit for a problem set that you hand in late. The problem sets are fairly involved so I encourage you to start them early! They tend not to be something you can complete the night before they are due. I encourage you to work with your classmates on these assignments, but all students must hand in their own assignment.

Exams: There will be two exams held approximately half way through the course and on the last day. Students with learning disabilities who require special exam procedures should get in touch with me as soon as possible. Students are required to take both examinations. A make-up examination will be an exception and will be granted **only** to those students with a valid university excuse. Exam dates, times, and locations will be posted on the course website.

The university's policy on grading requires me to use the grading system I announce at the beginning of the semester in all cases. I cannot make any exceptions to that rule. Be sure to review the problem sets and old examinations posted on the website as soon as possible to determine if this course is right for you.

Tentative Course Outline

1. The Theory of Rational Choice
2. Nash Equilibrium Theory
3. Nash Equilibrium Illustrations
4. Mixed Strategies
5. Extensive Form Games with Perfect Information (Theory)
6. Extensive Form Games with Perfect Information (Illustrations)
7. Extensive Form Games with Perfect Information (Extensions)
8. Bayesian Games
9. Extensive Form Games with Imperfect Information
10. Repeated Games
11. Bargaining

Additional References

*These are other references that you may wish to consult, but are **NOT** required for the course.*

Bierman and Fernandez, *Game Theory with Economic Applications*, Second Edition, Addison Wesley (1998). [A good undergraduate text on game theory.]

Binmore, *Fun and Games*, Heath (1992). [An advanced text that gives a formal presentation of game theory with a limited treatment of games with private information.]

Dixit and Nalebuff, *Thinking Strategically*, W.W. Norton (1991). [A popular book on strategy.]

Dixit and Nalebuff, *The Art of Strategy*, W.W. Norton (2008). [New release of previous reference.]

Fudenberg and Tirole, *Game Theory*, MIT Press (1991). [A comprehensive graduate text.]
Krishna, *Auction Theory*, Academic Press (2002). [A comprehensive graduate text on modern auction theory.]

Luce and Raiffa, *Games and Decisions*, Wiley (1957). [A classic text on early game theory.]

Milgrom, *Putting Auction Theory to Work*, Cambridge University Press (2004). [An excellent graduate text on modern auction theory.]

Milgrom and Roberts, *Economics, Organization, and Management*, Prentice Hall (1992). [An excellent text on organizational and incentive issues.]

Osborne, Martin J., *An Introduction to Game Theory*, Oxford University Press (2004). [Osborne is a formal undergraduate introduction to game theory and its applications.]

Osborne and Rubinstein, *A Course in Game Theory*, MIT Press (1994). [A graduate text focusing on games with complete information.]

Owen, *Game Theory*, Academic Press (1982). [Emphasizes zero-sum games and games with complete information.]

Raiffa, *The Art and Science of Negotiation*, Harvard University Press (1982). [An excellent book on the analysis of negotiation problems.]

Schelling, *The Strategy of Conflict*, Harvard University Press (1960). [Discussion of some of the important issues in bargaining and other situations of conflict.]

Shubik, *Game Theory in the Social Sciences*, MIT Press (1983). [A general text in game theory with numerous applications.]