# Econ 109: Game Theory 

Fall 2009

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Office Hours: M 12:30-14:30
Class: MWF 10:00-10:50 in WLH room 2005.

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Justin Elliot (jmelliot@ucsd.edu)
Discussions: Th 7-7:50pm and 8-8:50pm in Center 101

This course introduces you to game theory and strategic thinking. We analyze interaction in situations in which each agent's behavior affects the well-being of other agents, i.e. strategic situations. Almost every type of interaction between living things is strategic. As social scientists, we focus on human interaction, and we shall assume that people behave in a rational, deliberate manner. The course develops basic theoretical tools and provides an analytical framework to understand the phenomena we observe when rational decision-makers interact. Ideas such as dominance, backward induction, Nash equilibrium, commitment, credibility, incomplete information, adverse selection, and signaling are discussed and applied to games played in class and to examples from a variety of areas, including economics, political science, and law.
Prerequisites: Econ 100B or 170B.

Examinations: There will be two midterm examinations and a final examination. The midterms are scheduled for Monday, October 26th, and Monday, November 23th, and will be held in class. The final will be cumulative and will take place on Friday, December 11, from 8-11am.

Grades: Two midterms (70\%); final (20\%); problem set completion and class participation (10\%).

Problem Sets will be assigned weekly. The best practice for the exams is to struggle with the problems yourself first.

Discussion Sections will be used to review material and help with exercises.

## Required Textbook:

Watson, J., Strategy: An Introduction to Game Theory, W.W. Norton, 2nd ed (JW)
Other recommended books: Dixit, Skeath, and Reiley, Games of Strategy, Norton 2003, 3rd. ed

Class Website: Materials will be posted on the WebCT page for Economics 109. Instructions for accessing WebCT are at http://webct.ucsd.edu. Students should check regularly for announcements.

Regrading: Students have one week from the day in which the examinations are returned to report errors in grading and/or to request that problems be re-graded. If a student submits his/her exam for re-grading, then the students entire exam will be re-graded by the professor (with no guarantee of a higher total score).

Academic Integrity: A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgment of the work and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned. To review UCSD policy see: http://academicintegrity.ucsd.edu

## Course Schedule

## I. Representing Games

F 9/25 Introduction. Extensive Form. JW 1-2.
M More on extensive form and strategy definitions. JW 3.
W Normal form representation. JW 3-4.
F $\quad$ Beliefs and mixed strategies. JW 4-5.

## II. Analysis of Static Settings

M 10/5 Dominance and best response. JW 6.
W More on dominance and best response. JW 6.
F Rationalizability and location example. JW 7-8.
M 10/12 More examples. JW 8.
W Nash Equilibrium (NE). JW 9.
F NE applications and examples. JW 10.
M 10/19 Mixed Strategy NE. JW 11.
W More applications. JW 11.
III. Analysis of Dynamic Settings

F Extensive form and sequential rationality. JW 14.
M 10/26 MIDTERM
W Backward induction and subgame perfection. JW 15.
F Subgame Perfection. JW 15.
M 11/2 Examples and applications. JW 16-17.
W Bargaining, ultimatum bargaining. JW 19 (20).
F Discounting and repeated bargaining. JW 21.
M 11/9 Repeated games. JW 22.
W (Veterans Day)
F More on repeated games. JW 23.
IV. Information

M 11/16 Incomplete information. JW 24.
W Incomplete information examples. JW 24.
F Bayesian NE and examples. JW 26-27.
M 11/23 MIDTERM
W More examples JW 27.
F (Thanksgiving)
M 11/30 Perfect-Bayesian Equilibrium. JW 28.
W PBE applications. JW 29.
F More PBE applications. JW 29.

