Econ 490 – Game Theory

Welcome

Welcome to Econ 490 – Game Theory!

Professor Contact Information

Office Hours: Wednesdays 9am-11:50am - 168 MVS Hall
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Course Description

Game Theory is the application of economic modeling to settings where the choices of one may affect the outcomes of others, and vice versa. One oil producer's output decision affects the price at which they and other oil producers sell the product; one movie studio's blockbuster affects ticket sales for their competitors; a builder wants to design a contract that discourages sub-contractors from completing half a job and then trying to renegotiate pay; etc. A major insight of this field of study is that naked self-interest does not necessarily result in optimal outcomes for the group or even any of the individuals within the group. Another insight is that repeated interactions can solve some, but not all, of these problems while potentially creating new ones. By course completion you will be able to model such strategic scenarios and better understand them when they arise in your own life/work.

Program Learning Goals: These are the skills we try to help you build in all MVS courses

1. Critical Thinking
2. Oral Communication
3. Written Communication
4. Collaboration
5. Conduct (Ethics)
6. Competency in Discipline

Course Learning Outcomes: Upon completion of this course, you will be able to

1. Explain the economic behavior of firms and households in strategic settings (1, 3, 6)
2. Describe and apply the scientific method to economic behavior, and devise methods for identifying the factors that motivate individuals and firms in strategic settings (1, 3, 6)
3. Apply the principles of competitive markets to identify factors that affect market prices and output in strategic settings (1, 3, 6)
4. Describe and distinguish between various forms of strategic interactions (simultaneous, sequential, repeated, etc.), and understand how to predict outcomes based upon the elements of a strategic interaction (1, 3, 6)
5. Evaluate the manner(s) in which third party intervention may be able to solve strategic dilemma (1, 3, 6)

Homework and Examinations

Your grade will be out of 1,000 possible points, awarded using the following assessments:

Homework (260 points total):
Almost every week towards the end of lecture, I will assign homework problems that will be due by the start of class the following week.

Two quizzes (120 points each): Dates TBA, depending on pace of course. One will take place before the Midterm and one will take place after.

Midterm (250 points): Thursday, March 13th

Final (250 points): Finals week on the university scheduled date/time

Missed Exam/Quiz Policy

Make-up exams will be scheduled for students who have legitimate and appropriate reasons for having missed an examination. All exam dates are listed on this syllabus.

Academic Honesty

Academic honesty is of the utmost importance, and any academic misconduct will be subject to the strictest enforcement possible. This includes taking the midterm or the final with anyone's help – the midterm and final must be taken by yourself.
See http://www.csuci.edu/studentlife/judicial-affairs/academic-dishonesty.htm for more information.

Course Outline

Lessons may take more or less than a week to complete, so do not assume that Lesson 8, for example, will take place during the 8th week of the course.

Lesson Number	Topic(s)
1	Introduction to game theory and strategic thinking.
2	Defining a game. General assumptions for game modeling, and the role of beliefs.
3	Representing a game using the extensive form and the normal form.
4	Simultaneous (static) games. Strategic dominance. Best responses. Pareto efficiency.
5	Equilibrium in simultaneous games: iterated dominance, intersection of best responses, Nash equilibrium.
6	Equilibria in simultaneous games with continuous strategy spaces. Mixed strategy Nash equilibria.
7	Dynamic (sequential) games. Sequential rationality, backwards induction, and subgame perfection.
8	Subgame perfect equilibria.
9	Bargaining: the bargaining solution, two-period alternating offers, infinite period alternating offers
10	Repeated games: two-period, finite-period, infinitely repeated. Equilibrium set with low discounting.
11	Random events and incomplete information. Markets and lemons. Auctions.
12	Bayesian Nash equilibria

Disability Statement: If you are a student with a disability requesting reasonable accommodations in this course, please visit Disability Accommodations and Support Services (DASS) located on the second floor of Arroyo Hall, or call 805-437-3331. All requests for reasonable accommodations require registration with DASS in advance of need. You can apply for DASS services online. Faculty, students and DASS will work together regarding classroom accommodations. You are encouraged to discuss approved accommodations with your faculty.

Subject to change statement: This syllabus and the assignments and dates listed in it are subject to change with notice.