



Game Theory
ECON 2105-1
Carlos Hurtado
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2015-19

1 Class Information

Class Lecture: T-Th-F 12:30 - 3:20 PM

Classroom: AU 202

Instructor: Carlos Hurtado (hrtdmrt2@illinois.edu)

Office Hours: After class by e-mail appointment.

Office: W 705

T.A.: Pedro Herrera Santamaría (po.hernandez92@uniandes.edu.co)

T.A. Office Hours: M - 4:00 - 5:00 PM

T.A. Office: W 907

Class Web-page: TBA

2 Class Goals

Game theoretic reasoning pervades economic theory and is used widely in other social and behavioral sciences. Game theory aims to help us *understand situations in which decision-makers interact*. Like other sciences, game theory consists of a collection of models. A model is an abstraction we use to understand our observations and experiences. A model is unlikely to help us understand a phenomenon if its assumptions are wildly at odds with our observations. At the same time, a *model derives power from its simplicity*. Game-theoretic modeling starts with an idea related to some aspect of the interaction of decision-makers.

The goal of this class is to review the models developed to express in a precise language the incentives of rational agents, that take into account their knowledge or expectations of other decision-makers' behavior, incorporating features that appear to be relevant for each model. The objective is to familiarize the students with the basic elements of the game theory to give them a tool when analyzing economic problems.

3 Course Outline

Tentative: This outline will be updated as we proceed through the course.

Date			Topic	References
W	Mayo 27		Introduction: Basic Elements of Noncooperative Games	MWG 7.C and 7.D and O 1.1
Th	Mayo 28		Introduction: Basic Elements of Noncooperative Games	MWG 7.E and O 1.1
F	Mayo 29		Static games: Dominant and Dominated Strategies	MWG 8.B
M	Junio 1	Comp.	Static games: Rationalizable Strategies	MWG 8.B and 8.C
T	Junio 2		Static games: Nash Equilibrium	MWG 8.D and O 2.1 -2.7
W	Junio 3	Comp.	Static games: Nash Equilibrium	Quiz 1 MWG 8.D and O Ch 3
Th	Junio 4		Static games: Nash Equilibrium	MWG 8.D and O 2.1 -2.7
F	Junio 5		Dynamic Games: Sequential rationality	MWG 9.B and O Ch5
M	Junio 8		Holiday	
T	Junio 9		Dynamic Games: Backward Induction	MWG 9.B and O Ch5
W	Junio 10	Comp.	Dynamic Games: Subgame Perfectgion	Quiz 2 MWG 9.B and O Ch6
Th	Junio 11		Dynamic Games: Finite Bilateral Bargaining	MWG 9 Apendix A
F	Junio 12		Dynamic Games: Infinite Horizon Bargaining	Class Notes
M	Junio 15		Holiday	
T	Junio 16		Dynamic Games: A version of the Folk Theorem - Exam review	Class Notes
W	Junio 17	Comp.		Exam 1
Th	Junio 18		Probability Review	Class Notes and O 17.7
F	Junio 19		Static games: Bayesian Nash Equilibrium	MWG 8.E and 8.F and O 9.1 - 9.4
M	Junio 22	Comp.	Dynamic Games: Beliefs and Sequential Rationality	MWG 9.C
T	Junio 23		Dynamic Games: Beliefs and Sequential Rationality	MWG 9.C
W	Junio 24	Comp.	The Theory of Auctions	Quiz 3 H Ch 7
Th	Junio 25		The Theory of Auctions	H Ch 7
F	Junio 26		Exam Review	

Important Dates:

Quiz 1 June 3.
 Quiz 2 June 10.
 30% of grades June 10.
 Last day to drop the class June 12.
 Exam 1 June 17.
 Quiz 3 June 24.
 Final Exam June 29.

4 Methodology

During the class we are going to present the theory and applications. In the references you will find problems to solve. I expect you to solve (many times) *all the relevant exercises* in MWG, chapters 7, 8 and 9. Moreover, O and H contain multiple examples and exercisers that you should use as practice. I will *try to* recommend additional problems, but is your responsibility to train yourselves. At the end of every complementary class on Wednesdays we will have a quiz or exam for you to prove that you have been studding at home.

5 Skills

- The student will understand the basic concepts of game theory and their importance.
- The student will increase his or her abilities to model economic agents.
- The student will improve his or her knowledge on the economic theory.
- The student will understand the relationship between rationality and incentives in an institutional framework.

6 Grades

Quiz 1	15 %
Quiz 2	15 %
Exam 1	20 %
Quiz 3	15 %
Final Exam	35 %

- Re-grading: If you have complaints regarding the results of an examination or a quiz, you should submit your complaints in writing within 48 hours from the time when the graded examination was returned. After reviewing a written complaint, your entire examination will be graded again, and the result will be final.
- Make-up Examination: To be fair, all students are expected to take examinations at the same time. Generally, students are discouraged from taking the make-up instead of the regular examination.
- Final grade: Is the weighted average of examinations and quizzes using the above percentages.

7 References

There are many books and online references that may help you. I will recommend the following:

- [B] Binmore, K. (2007). *Game theory: a very short introduction*. Oxford University Press.
- [D] Dutta, P. K. (1999). *Strategies and games: theory and practice*. MIT press.
- [HV] Hargreaves-Heap, S., & Varoufakis, Y. (2004). *Game theory: a critical introduction*. Routledge.
- [MWG] Mas-Colell, A., Whinston, M. D., & Green, J. R. (1995). *Microeconomic theory* (Vol. 1). New York: Oxford university press.
- [O] Osborne, M. J. (2000). *An introduction to game theory*. Online version
- [OR] Osborne, M. J., & Rubinstein, A. (1994). *A course in game theory*. MIT press.
- [H] Humphreys, M. (2005). *Game theory (W4210) Course Notes*. Online version