



Game Theory & Applications

ECO 4400

Instructor Info —



Dr. Fatma B. Gunay



Office Hrs: MW 12:30-1:30pm



MAT313



fgunay@ufl.edu

Course Info —



Prereq: ECO 2023, ECO 3101 or ECP 3703, and Calculus



Mon, Tues & Wed



9:30am-12:15pm



MAT0103

Practice Info —



Thursday



11am-12:15pm



MAT0103

TA Info —



Andres Munoz Gomez



Office Hrs: F 11am-1pm



MAT301A



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Overview

This course provides a detailed introduction to Game Theory and its applications. We will start with the basic concepts and insights of game-theoretic reasoning. The first week of the course is devoted to the introduction of the standard ways of representing games and to the discussion of the meaning of a strategy in different types of games. Once we cover the basics of game theory, we will dive deep into the applications of game theory to different fields. Games with imperfect and incomplete information, decision making under uncertainty, and mechanism design are more advanced topics we are going to cover. Some of the applications we will analyze (as time permits) are the Cuban missile crisis, insurance provision, contract design, price discrimination, and competition in oligopolies.

Course Material

Required Texts

Harrington, Joseph. *Games Strategies and Decision Making*. 2nd Edition. MacMillan Learning.

Recommended Text

Joel Watson. *An Introduction to Game Theory*. 3rd Edition. WWNorton. (it has lots of practice problems)

Avinash K. Dixit & Barry J. Nalebuff *The Art of Strategy: A Game Theorist's Guide to Success in Business and Life*. WWNorton.(very good book on real life applications of game theory)

Lectures

ECO4400 will be delivered in person in MAT0103, but lectures from previous summers will also be posted on Canvas for review purposes. Course material changes overtime. So, please keep in mind that the lectures posted on Canvas are only for supplemental learning and can not be substituted for the materials in class. Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Exam Policies

There will be 3 in-class exams. The exams are on July 10th, July 24th, and August 7th during the official class time. The exams are not comprehensive and include multiple choice questions, short answer questions as well as problems. I will provide practice tests before the exams. All students have to take the exams in-class.

During exams, students may use a simple scientific calculator (not a calculator with graphing abilities), and a 1-sided 3x5 cheat sheet.

Make-up exams will only be allowed for students who have a substantiated excuse approved by the instructor *before the exam date*. When academic or religious conflicts exist or emergencies arise, make-up exams may be provided.

Exams will be graded within a week and the results will be announced on Canvas.

Grading Scheme

60%	Exams, 20% each
25%	Homework Assignments
15%	Quizzes

Grades will follow the following scale. Curving is at the discretion of the professor.

Points	Grade
92.50 and above	A
90-92.49	A-
87.5-89.99	B+
82.5-87.49	B
80-82.49	B-
77.5-79.99	C
72.50-77.49	C-
70.00-72.49	D
0-69.99	E

Pop-Quizzes

There will be a pop-up quiz each week during a class, which include the topic covered during the lecture. You have to be present in the classroom to be able to take the quiz. The questions are designed in such a way that following the lectures is enough to get a 100%. You just need to pay attention to the lecture. At the end of the semester, I will drop the lowest grade out of these quizzes.

Assignments

There will be an homework assignment each week. I will post them on Thursday afternoons. They are due on Monday at 9:30am. Assignments will be posted on Canvas and you will hand them in in class. At the end of the semester, I will drop the lowest grade.

Accommodations for Students with Disabilities

If you have a disability and need accommodations please be sure to contact the Disability Resource Center right away so they can help you get the accommodations you require. If you will need to use any accommodations in this class, please talk with me early so you can have the best possible experience this semester. For more specific information visit <https://disability.ufl.edu>

Academic Integrity

The University of Florida maintains high standards for academic integrity in order to provide the students the best quality education. An online copy of the academic honor policy can be found at Student Honor Code. Students are expected to be familiar with the Code and to recognize that their work in the course is to be their own original work that truthfully represents the time and effort applied.

Class Schedule

*Tentative

Week 1	Introduction and Simultaneous Move Games	H Ch3	
	Dominant / Dominated Strategies	Worksheet 1	
	Simultaneous Move Games	H Ch4	HW1
	Nash Equilibrium	Worksheet 2	
	Pure vs Mixed Strategies	Worksheet 3	
Week 2	Nash Equilibria in Continuous Games	H Ch6 ,	
	Optimization using Calculus	Worksheet 4,5	HW2
EXAM I	(July 10)		
Week 3	Sequential Move Games	H Ch8	HW3
	Subgame Perfect Nash Equilibrium	Worksheet 6,7	
Week 4	Games with Imperfect Information	H Ch9	
	SPNE revisited	Worksheet 8	
	Uncertainty and Information	H Ch7	HW4
		Worksheet 9	
EXAM 2	(July 24)		
Week 5	Games with Incomplete Information	H Ch10	HW5
	Bayesian Nash Equilibrium	Worksheet 10	
Week 6	Signaling	H Ch12	HW6
	Pooling, Separating, and Semi-Separating Equilibrium		
EXAM 3	(August 7)		