GAME THEORY & BUSINESS
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COURSE CONTENT

COMPANIES (managers, individuals) often make decisions that affect the well-being of others. In turn, our payoff (compensation, well-being) is often affected by the choices made by others. In simpler terms, people often operate in situations of strategic interaction. Game Theory is the discipline that studies strategic interaction. The theory has two inter-related goals:

1. To advise parties involved in situations of strategic interaction on the best course of action.
2. To predict the outcome of strategic interaction.

This course is an introduction to Game Theory. Our goal is to learn the basic conceptual tools from Game Theory and identify some real-life business situations where these tools can be useful to a manager. The games presented and solved in class go to the essence (often in the simplest framework possible) of particular aspects of strategic interaction that arise in real-life situations. To understand the similarities between these simple games and the many situations that arise both in business and in our daily economic lives, the course provides applications of the theory to business and economics.

COURSE STRUCTURE

CLASSES will combine theory and applications. We will present the concepts required to analyze different forms of strategic interaction. For instance: What do you know when you have to make a decision? Do you observe the choices of your opponents? Do you interact with them repeatedly? Different answers to these questions call for different frames of analysis. We will then apply the theory to business and economic situations. For example, we will study price and quantity competition, endogenous barriers, formation and stability of cartels, and auctions.

READINGS

READINGS are available online on the Canvas course website. These range from news articles to chapters of books. Readings are numbered 1 to 13.

The course has an optional recommended textbook:

- *Games of Strategy*, Second Edition, by Avinash Dixit and Susan Skeath. New York: WW Norton.

Also recommended for lighter reading on business and games are:

- *The Art of Strategy*, by Avinash Dixit and Barry Nalebuff. New York: WW Norton.
- *Co-opetition*, by Adam Branderburger and Barry Nalebuff. New York: Currency Doubleday.

Problems and Assignments

Optional problems: There is a collection of optional problems on Canvas. The problems follow the progression of the material covered in class. Problems are solved by the TA during the Friday review sessions. Solutions will be posted on Canvas.

Assignments: There are three graded assignments. Students are encouraged to work in groups for the assignments, but the answers must be turned in *individually*. Assignments are due at the beginning of the class indicated in the course outline. They will be handed out one week before the due date.

Grading Policy and Class Participation

Grades in the course will be based on the three assignments, a final exam, and class participation:

Final Exam	50%
Assignments	30%
Class Participation	20%

Each student's participation will be evaluated with respect to the contribution that the student makes towards the entire class' learning experience. The quality of contribution matters more than the frequency of speech.

Course Outline

Date	Topic	Readings	Assignment Due Date
Class 1	Course Introduction What is a Game?	Chapter 1 R1	
Class 2	Simultaneous Games I How Far Can We Go with Rationality?	Chapter 4 (pp. 84-85, 90-98) R2	
Class 3	Simultaneous Games II Nash Equilibrium, Being Unpredictable	Chapter 4 (pp. 86-90, 98-113), Chapter 7 R3, R4	
Class 4	Strategic Competition I Prisoners' Dilemma	Chapter 5 (pp. 124-131)	
Class 5	Strategic Competition II Avoiding Prisoners' Dilemma	R5	Assignment 1
Class 6	Sequential Games I Looking Forward, Reasoning Back	Chapter 3, Chapter 10	
Class 7	Sequential Games II Endogenous Barriers to Entry	Chapter 10 R6, R7	
Class 8	Sequential Games III Bargaining, Dynamic Pricing	Chapter 17	
Class 9	Repeated Games Stability of Cartels	Chapter 11 (pp. 345-356) R8, R9	Assignment 2
Class 10	Auctions I Private Values	Chapter 16 R10	
Class 11	Auctions II Common Values, Wars of Attrition	Chapter 16 R11, R12	Assignment 3
Class 12	Review		