Introduction to Game Theory

Lecturer: David Ettinger
Contact information: Idem

Department: LSO
Semester: 1

Course level: L3 Undergraduate
Domain: Economics …
Teaching language: English
Number of in-class hours: 36
Number of course sessions: 12
ECTS: 6

Course description and objectives

This course provides an introduction to game theory, the study of strategic interactions among rational decision-makers. Students will learn how to model situations in which individuals, firms, or institutions make decisions that mutually affect one another, and how to predict the outcomes of these interactions using core solution concepts.
The course covers strategic games, extensive-form games, mixed strategies, Nash equilibrium, subgame perfection, and games with imperfect or private information. Throughout the sessions, theoretical tools are complemented by examples and applications drawn from economics, social sciences, and real-world strategic behavior.
By the end of the course, students will have a solid foundation in game-theoretic reasoning and its practical relevance for analyzing conflict, cooperation, negotiation, competition, and decision-making under strategic uncertainty.

Prerequisites

Basic knowledge of microeconomics (consumer preferences, introduction to the firm) mathematics and probabilities (the notion of probability, independent events)

Learning outcomes

By the end of the course, students will be able to:

- Model strategic interactions using the standard tools of game theory.
- Apply key solution concepts—dominance, Nash equilibrium, mixed strategies, and subgame perfection—to a variety of games.
- Analyze sequential, imperfect-information, and signaling games using appropriate reasoning methods.
- Evaluate situations involving private information and strategic uncertainty.
- Interpret strategic behavior in economic, social, and behavioral contexts using game-theoretic frameworks.

Assignments and grading

The final grade is the average of the grades of the **mid-term exam** and the **final exam**.
The numerical grade distribution will dictate the final grade. The passing grade for a course is 10/20.

Attendance
Attendance is mandatory. Students are expected to attend all classes, arrive on time, and stay for the entire session. Repeated absences or lateness may affect the final grade.

Class Participation
Active participation is encouraged, as it contributes to making classes more engaging and instructive. Students are expected to come prepared and contribute thoughtfully to discussions. When participation is part of the course assessment, it is evaluated based on the quality of contributions rather than their quantity.

Exam Policy
Students are not allowed to bring any materials into exams, except those explicitly authorized by the instructor. Unexcused absences from exams or failure to submit assigned cases will result in a grade of zero when calculating final averages. All exams must be submitted at the end of the examination period.

Communication and Grading
All questions or concerns regarding grading or course policies must follow the official procedures. No direct negotiation with instructors about grades or assessments is permitted.

Course structure

Session	*Topic*
1	Introduction to strategic reasoning
2	Building a model of strategic interaction
3	Solving a game when rationality is common knowledge
4	Nash equilibria in discrete game with 2 or 3 players
5	Nash equilibria with n players
6	Nash equilibria with n players
7	**Intermediary Exam**
8	Randomized strategies
9	Sequential games with perfect information
10	Sequential games with imperfect information
11	Games with private informon
12	**Final Exam**

Bibliography

An Introduction to Game Theory, Joseph Harrington, Worth Publisher 2015
An Introduction to Game Theory, Martin Osborne, Oxford University Press, 2004

Lecturer's biography

After studying management (HEC), David Ettinger completed a thesis in economics in the field of game theory focusing on allocation mechanisms and auctions. He began his academic career in 2003 at the University of Cergy-Pontoise, where he was director of studies and head of the economics department. He then joined Paris Dauphine-PSL University in 2010 as a professor of economics. There, he served as director of the economics laboratory, head of the graduate economics program, and head of scientific integrity.
David Ettinger has taught at the University of Cergy-Pontoise, Paris Dauphine-PSL University, the Ecole Nationale des Ponts et Chaussées, ENSAE, MAP, and other institutions**.**

Moodle

This course is on Moodle: **Yes**

Academic integrity

Be aware of the rules in Université Paris Dauphine about plagiarism and cheating during exams. All work turned in for this course must be your own work, or that of your own group. Working as part of a group implies that you are an active participant and fully contributed to the output produced by that group.