

Université Paris 1 Panthéon - Sorbonne

Department of Economics

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Game Theory

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Description

The objective of this course is to provide students with an introduction to strategic interactions with self-interested agents. The course will introduce concepts to analyze games in different environments. Along with the concepts, a number of examples will be given, which highlight the applicability of game theory to a variety of fields, including economics, political science, computer science, and biology. Furthermore, in this course, we will evaluate alternative solutions to a problem, using an appropriate analytical framework, and recommend an optimal solution. Finally, the theoretical models will be used to predict the behavior of individuals, firms, and economic systems.

Structure

The course comprises of lectures and classes. In addition, homework assignments provide an indication of the type of questions that will be asked in the final exam. **Homework assignments are required to be typed; otherwise, will earn a maximum grade of 75%. Graphs and calculations may be handwritten, but must be clearly written.** There are going to be 6 sets of group-based homework assignments. Each group should have 4 members (no more, no less without prior permission). Thus, each group should submit one write-up for each

assignment. Late assignments will earn 0. The course grade is determined based on the student's performance in the 6 homework assignments, the class participation, and the two-hour, written, final examination. The weight allocated to each homework assignment is 5%, to class participation is 20%, and, finally, to the final examination is 50%.

Preparatory and General Readings

By and large, the course will be based on **An Introduction to Game Theory** (2004) by Martin J. Osborne. However, besides this specific book, there are some books and academic papers that you may find useful, if you are interested in getting a deeper knowledge about game theory. For instance, the book **A Course in Game Theory** by Martin J. Osborne and Ariel Rubinstein could provide additional information on the topics examined as well as the academic papers provided on the website.

Tentative Schedule

Topic 1: Logic and Set Notation, History of Game Theory

2: Nash Equilibrium: Theory

3: Nash Equilibrium: Illustrations

4: Mixed Strategy Equilibrium

5: Extensive Games with Perfect Information: Theory

6: Extensive Games with Perfect Information: Illustrations

7: Extensive Games with Perfect Information: Extensions and Discussion

8: Bayesian Games

9: Extensive Games with Imperfect Information

10: Repeated Games: The Prisoner's Dilemma

11: Adaptive Learning Models