

14E024

## Microeconomics II

Term 2 – 6 ECTS

Elective Course

Prof. Joan de Martí

### Prerequisites to Enroll

Some elements of mathematics (probability theory, calculus) are recommended.

### Overview and Objectives

This course extends the analysis of Microeconomics I to situations with strategic interactions, that is, of economic situations where the choice of an agent has an impact on the utility of other agents. This involves, for example, the analysis of public goods, and different mechanisms to allocate goods such as auctions or bargaining.

We will first provide the basic elements of (non-cooperative) game theory, the main tool to analyze strategic interactions in economics. This will include the basic notions of equilibrium and refinements (Nash, subgame perfection, Bayesian equilibrium, Perfect Bayesian Equilibrium...). As we proceed, we will apply this toolbox to the study of several economic questions including firms' decisions in oligopoly markets, individual provision to a public good, bidding behavior in several auction formats, bargaining decisions in negotiations, and the analysis of repeated interactions. If there is time, we are going to introduce some basic ideas of cooperative game theory.

We will also point to a fundamental question in economics: is it possible to aggregate the individual preferences of a group or society to derive optimal collective decisions? This is an essential question in economics and a main concern of social choice theory. We will discuss here a very negative answer due to Arrow, as well as some more optimistic but restrictive approaches to try to overcome the pessimism of Arrow's result.

Finally, we are going to explore mechanism design theory, that deals with the question of the design of optimal institutions, given a particular set of goals, when individual information is private. The analysis in this section connects with a number of questions covered previously such as adverse selection problems, public good provision games, or auctions.

### Course Outline

**Strategic Interactions. Game Theory.**

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Normal Form and Extensive Form  
Rationalizability and Equilibrium Concepts  
Imperfect Information  
Incomplete Information

### **Strategic Interactions. Applications.**

Public Goods  
Contracts  
Auctions  
Bargaining  
Signaling

### **Mechanism Design**

Designing the Rules of the Game  
The Adverse Selection Problem Revisited  
Optimal Mechanisms. VCG Mechanisms.  
Auctions and Revenue Equivalence

### **Social Choice**

From Individual to Collective Preferences.  
A Negative Result: Arrow's Theorem  
Alternative Approaches

### **Required Activities**

There will be several problem sets that students must complete.

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### Evaluation

30% problem sets and 70% final exam.

### Competences

- x Capacity of utilization of the theoretical instruments of the to analyze situations of coherent form.
- x Ability to use the appropriate (statistical and numerical) techniques.
- x Acquire a solid knowledge base for the study of quantitative issues.
- x Ability to work with microeconomic analysis tools and their empirical and theoretical applications.

### Learning Outcomes

- x Students should get an overview of economic and financial theory.
- x Students must be able to recognize theories and present arguments with precise examples.
- x Students will have the ability to understand how markets work and explain their weaknesses.

### Materials

*These textbooks can prove particularly useful:*

Gibbons, R. (1992). *A primer in game theory*.

Jehle, G. and P. Reny (2001), *Advanced Microeconomic Theory*, Addison Wesley.

Osborne, M. (2003) *Introduction to Game Theory*, Oxford University Press

Tadelis, S. (2013) *Game Theory: An Introduction*, Princeton University Press

Vega-Redondo, F. (2003) *Economics and the Theory of Games*, Cambridge University Press.

Watson, J (2013) *Strategy*, WW Norton & Co

*The following are more formal/advanced treatments:*

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Fudenberg, D. and J. Tirole (1991) *Game Theory*, MIT Press.

Kreps, D. (1990), *A Course in Microeconomic Theory*, Princeton University Press.

Mas-Colell, A., M. Whinston and J. Green (1995), *Microeconomic Theory*, Oxford University Press.

Myerson, R. (1991) *Game Theory: Analysis of Conflict*, Harvard University Press.

Osborne, M and A. Rubinstein (1994) *A Course in Game Theory*, MIT Press.