European University Institute
Microeconomics, Block II

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Overview. This is a five-week course which covers the basics Game Theory and some paradigmatic applications. Information economics, together with the game-theoretic tools required to study it, will be the object of Block III.

Reading. For most of the course, I will refer to chapters of a book of mine:

- *Economics and the Theory of Games*, Cambridge University Press 2003.

To complement them, there are a number of good textbooks that can be used:

- Fudenberg D. and J. Tirole: Game Theory, MIT Press 1991 (occasionally quite hard but extraordinarily comprehensive).
- Myerson, R.: Game Theory: Analysis of Conflict, Harvard University Press 1992 (not so comprehensive but very carefully written).
- Gibbons, R.: Game Theory for Applied Economists, Princeton University Press 1992 (not very formal on the theory, but very good and intuitive on the applications).

Assignments. There will be 5 problem sets. Cooperation on the assignments is encouraged, but only in pairs. In that case, the partner should be mentioned and the problem set written up individually.

Outline of Topics

1. The basic game-theoretical framework
   - (a) Representation of a game in extensive form
   - (b) Strategies: pure, mixed, behavioral
   - (c) Representation of a game in strategic form

2. Fundamental solution concepts
   - (a) Dominance and iterative dominance
   - (b) Nash equilibrium
   - (c) Examples

3. Nash equilibrium: applications
   - (a) Oligopoly: Cournot model
   - (b) Oligopoly: Bertrand model
   - (c) Public good allocation problems: incentives and efficiency

4. Nash Refinements in multi-stage games: theory and applications
   - (a) Perfect Subgame Equilibrium
   - (b) Stackelberg oligopoly
   - (c) Stahl-Rubinstein bargaining model

5. Games with incomplete information: theory and applications
   - (a) Harsanyi approach: Bayesian games
   - (b) One-sided auctions: first- and second-price auctions
   - (c) Two-sided auctions: bilateral case