



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

Game theory and strategy

PROF. GIOVANNI URSINO

Course aims and intended learning outcomes

This course is an introduction to strategic thinking applied to economics as well as managerial settings. By drawing simultaneously on the language and tools of game theory, economics and management, it develops a rigorous and coherent logical framework that helps analyse common strategic situations. It introduces the main ideas and techniques of game-theoretic analysis, focusing on archetypal strategic situations frequently occurring in real economic contexts.

The goal of the course is to provide students with the fundamental instruments needed to translate a real-world scenario into a game theoretic framework so as to facilitate its understanding from a strategic point of view. Students will learn how to frame in an analytic way a strategic situation and will be able to understand and anticipate what will be the real outcome of such a situation as well as the main forces leading to said outcome. Since it focuses on the formal and thorough analysis of fundamental principles of strategic thinking, the course requires an attitude and benefits from training in abstract reasoning and formal modelling..

Course content

- Simultaneous moves games.
- Games in strategic form, dominant strategy equilibrium, iterated deletion of strictly dominated strategies.
- Reaction functions and Nash equilibrium.
- Mixed strategies, domination by a mixed strategy, never-best-response and rationalizability.
- Games in extensive form: backward induction and information sets.
- Subgame perfect Nash equilibrium.
- Repeated games. Folk theorems. Collusion.
- Imperfect information and incomplete information. Moral Hazard.
- Bayesian Nash Equilibrium.
- Sequential rationality, beliefs consistency and perfect Bayesian Nash Eq.
- Signalling: separating equilibria and pooling equilibria.
- Adverse Selection and the Lemons problem.

Reading list

PRAJIT K. DUTTA, Strategies and Games: Theory and Practice, MIT Press, 1999.

Additional teaching material will be distributed in class.

Teaching method

The course is based on theoretical lectures (60 hours) and applications (14 hours).



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Assessment method and criteria

Grading is based on a final written exam covering all the program.

Notes and prerequisites

The course requires an attitude and benefits from training in abstract reasoning and formal modelling. Given the abstract modelling techniques and the deep analytical training required to successfully complete the course, it is strongly recommended that students attend all lessons and practice classes from the beginning of the course.

Office hours arrangements will be defined in class.