GAME THEORY AND APPLICATIONS

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Year 2016/2017
Spring semester

COURSE DESCRIPTION

This is a course in Game Theory and its Applications. Its aim is to lead to a better understanding of economic reasoning and decision making. There is no single textbook for this course.

We study the strategic interactions of rational players and their consequences. We will put an emphasis on applications in Industrial Organization, e.g. Cournot, Bertrand, and Hotelling Duopolies and some cases.

After an introduction to the basic concepts of normal and extensive form games we look at repeated games and their application to the behaviour of Cartels and implications for Competition Policy.

We will then treat games of incomplete information and apply them to some auctions. Finally we may look at fundamental results of mechanism design theory and how these can be used to spur innovative activity.

Type of course

O Elective course

Language of instruction

O English

PEDAGOGICAL FORMAT

The course takes place every other week in two two-hour blocks. It consists of lectures that cover theory and applications treated in class, both by exercise problems and matching cases. These will prepare students for the mid-term and the final exam.

COURSE GRADE SYSTEM

Grading takes into account class performance including exercises and cases (20%), one mid term (30%), and one final exam (50%). Make-up exams will be given on presentation of a doctor's note indicating the inability of the student to take the exam at the scheduled time only.

DETAILED OUTLINE (TENTATIVE)

1. Introduction to Game Theory, Normal form Games, Rationality, Nash Equilibrium.
2. Mixed strategy Nash Equilibrium, Oddness Theorem.
3. Applications: Cournot, Bertrand, and Hotelling Duopoly.
4. Correlated Equilibrium and Bayes' Theorem.
5. Extensive form games with perfect information.
6. Subgame Perfect Equilibrium.
7. Application: Stackelberg Duopoly.
8. Repeated Games and Folk Theorems.
9. Application: Cartels.
10. Games of Incomplete Information with Applications: Cournot Duopoly and Auctions.
11. Mechanism Design and Applications to Innovation.
12. Final Exam.

READING (TENTATIVE)

- Gibbons, Robert (1992): *Game Theory for Applied Economists*, (*A Primer in Game Theory*), University Press, Princeton.

- Fudenberg, Drew & Tirole, Jean (1991): *Game Theory*, MIT Press, Cambridge.

- Tirole, Jean (1988): *The Theory of Industrial Organization*, MIT Press, Cambridge.

- Bagwell, Kyle and Wolinsky, Asher (2002): "Game Theory and Industrial Organization", in *Handbook of Game Theory*, (Aumann, Robert & Hart, Sergiu eds.) Vol. 3, Ch. 49, pp. 1521-2351.

- Behringer, Stefan (2014): "Equilibrium Market and Pricing Structures in Virtual Platform Duopoly: Coexistence on Competing Online Auction Sites revisited", in *Analysis of Competition Policy and Sectoral Regulation*, *CRESSE*, (Peitz, Martin & Spiegel, Yossi, eds.) World Scientific, available at http://www.stefanbehringer.com/twosided112.pdf

- Behringer, Stefan (2016): "Product Repositioning in the UK Newspaper Industry", *Theoretical Economics Letters*, 6, 986-999, available at http://www.scirp.org/Journal/PaperInformation.aspx?PaperID=70693