

Aims and Objectives

This course aims to familiarise students with the basic tools of (mainly non-co-operative) game theory and to enable them to apply game-theoretic-skills to simple economic problems *all by themselves*. The course will be concerned with both static and dynamic games.

At every stage, each new abstract theory will be illustrated in the context of some economic example/application. In order to emphasise the broad potential scope of the theory, these examples/applications will be in one or more of the following areas: auctions and design of markets, bargaining, finance, information economics and contract theory, industrial organisation, labour economics, macroeconomics, political economy and public economics. Some of the examples/applications are covered in the suggested questions for the classes. There may not be enough time to cover all applications in the lectures or in the classes.

Tentative Course Plan

1. Introduction and definitions
2. Static Games of Complete information
3. Static games of incomplete information
4. Mechanism Design with applications to auctions, contracts and public goods
5. Dynamic games with perfect information
6. Bargaining with complete information
7. Repeated Games and 'collusive behaviour'
8. Dynamic games with imperfect/incomplete information

Assessment

The examination for this module will be by a 3-hour written exam.

Readings

Some graduate texts on microeconomics also have excellent chapters on game theory and applications. In particular, I recommend one of the following:

- D. Kreps [A Course on Microeconomic Theory](#) (1990) Ch. 11-15
- A.Mas-Colell, M.Whinston and J. Green [Microeconomic Theory](#) (1995) Ch. 7, 8, 9, 12, 13, 22, and 23

There are excellent text-books on game theory. Good introductory graduate texts on game theory (these are appropriate for first year graduate courses but they could also be used for advanced/specialised undergraduates) are:

- K. Binmore [Playing for Real](#) (2008)
- R. Gibbons [A Primer in Game theory](#) (1992)
- M. Osborne [Introduction to Game Theory](#) (2004)

The following are very good advanced game theory text-books:

- D. Fudenberg and J. Tirole Game Theory (1991)
- M. Maschler, E. Solan, and S. Zamir Game Theory (2013)
- R. Myerson Game Theory; An Analysis of Conflict (1989)
- M. Osborne and A. Rubinstein Game Theory (1994)

The level of the course is somewhere between the two microeconomics texts and the advanced game theory texts.