

# CITY UNIVERSITY

## Microeconomics - Game Theory

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Lectures: Tuesday 5pm–8pm  
Office Hours: Friday 2-3pm

### Description

Optimal decisions of economic agents depend on expectations of other agents' actions. Game theory is a set of analytical tools designed to help us understand behaviour in multi-person decision settings. This eight-hour course examines various models of equilibrium behaviour in both static and dynamic games. Besides introducing the theoretical concepts, we should analyse a wide range of applications. Particular attention will be devoted to the analysis of the behaviour of firms competing in the market.

### Textbooks

The main texts are:

R. Gibbons, “*A primer in Game Theory*”, Pearson. (henceforth **G**)

M. Osborne, “*An introduction to Game Theory*”, Oxford. (**O**)

Mas-Colell, A., A. Whinston and J. Green (1995): “*Microeconomic Theory*”, Oxford. (**MWG**)

General microeconomics textbooks that include some sections on Game Theory:

Jehle, G and P. Reny, “*Advanced Microeconomic Theory*”, Addison Wesley.

More advanced textbooks include:

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

Osborne, M. and A. Rubinstein, “*A course in Game Theory*”, MIT.

## Course Outline

There are four chapters. A brief guide follows, with contents and suggested readings from the main texts mentioned above.

1. **Introduction and elements.**

Examples of games. Extensive and strategic form representations. The concept of strategy. Mixed strategies.

G: Chapters 1.1.A, 1.3.A and 2.4.A. O: Chapters 1, 4.1-4.3.1 and 5.1-5.2. MWG: Chapter 7.

2. **Static games with complete information.**

Dominant and dominated strategies. Nash equilibrium. Applications: static oligopoly, political economy.

G: Chapter 1. O: Chapters 2-4. MWG: Chapters 8.A–8.D.

3. **Dynamic games with complete information.**

i. Subgame perfect equilibrium. Applications: bargaining, dynamic oligopoly.

ii. Repeated games. Folk Theorem. Application: collusion.

G: Chapter 2. O: Chapters 5-7. MWG: Chapter 9.B.

4. **Games with incomplete information** (time permitting).

i. Static games: Bayesian Nash Equilibrium. Applications: static oligopoly, public goods, auctions.

G: Chapter 3. O: Chapter 9. MWG: Chapter 8.E.

ii. dynamic games with incomplete information: (Weak) Perfect Bayesian equilibrium. Sequential equilibrium.

G: Chapter 4. O: Chapter 10. MWG: Chapter 9.C.