



Module Title: Applied Game Theory for Economics and Business **Module Coordinator: Dr Randolph Luca Bruno**

Module Code: SESS1005

Pre-requisites: No prior knowledge is required

Credit Value: 0.5 cu

Runs in (2014/15): Fall Term

Provisionally Taught at: TBC

Compulsory for: 1st year EBEES, EBESYA

Open to: EBEES, EBESYA 1st year students only

Module Outline

The course aims to provide a comprehensive introduction to applied game theory with real and relevant examples from the business/management world, such as interactions between firms, governments and consumers. The concepts of strategic interaction, strategic form games, games tree, sequential moves, simultaneous moves, Nash Equilibrium, dominance, mixed strategies, uncertainty/incomplete information, dynamic/evolutionary games and repeated games will be unfolded step by step. The knowledge that students will have acquired by the end of the course will serve as a solid foundation on which more focused and concentrated studies of intermediate microeconomics can be applied. By the end of the course, students will be able: to understand and analytically interpret the main concepts pertaining to game theory in general and strategic interactions in particular; to solve simultaneous and sequential games both in complete information and incomplete information settings; to identify the existence of strategic interaction in real world examples and to model these examples accordingly; to re-interpret the concepts learned in the Introduction to Microeconomics module (e.g. duopoly, Cournot, Bertrand) in a strategic form game. The course can be broadly divided into 10 parts/lectures: 1) Introduction and General Principles; 2) Games with sequential vs. simultaneous; 3) Games with pure and mixed strategies; 4) Uncertainty and Information; 5) Strategic moves; 6) Cooperation, Conflict and Coordination in Collective actions Games; 7) Evolutionary games 8) Applications to voting, bidding, bargaining and market structure; 9) Revision. The approach to the strategic interaction will be therefore initially underpinned by the theory (exercise on how to compute an equilibrium) and then complemented by real world examples from recent articles or case from the press (e.g. fees increase in the Higher Education; Automotive Industry “jump” into new technology; moral hazard of banks in the financial crises; hold-up problems in specific investments; bids for 4G licensing in UK).

At the end of the module you should have fulfilled the following objectives

1. To develop students’ awareness of the issues, concepts, theories pertaining Game Theory and strategic interactions in general.
2. To equip students with knowledge and understanding of different layers of transactions and bargaining power in the economic relationships between firms, consumers and public institutions (Central Bank, governments, EU).
3. To equip students with necessary learning skills which will prove useful for applying game theory concepts and ideas to interpret real-world phenomena in business (domestic and international), advanced vs. developing countries and the role of trust in repeated interactions.

Assessment Methods

Assessment Style: Two-hour written exam (75%) and end-of term 2000w Coursework (25%).

Preliminary Reading

Dixit, Avinash and Susan Keath (2010) *Games of Strategy*, Norton, New York and London, Third Edition.

Heifetz, Aviad (2012) *Game Theory, Interactive Strategies in Economics and Management*, Cambridge University Press, UK.

Cooper, W. Russell (1999) *Coordination Games*, Cambridge University Press, UK.

Tresch, R. W. (2008) *Public Sector Economics*, Palgrave Macmillan