

Game Theory and Economics - Video course

COURSE OUTLINE

1. The course is intended for students and teachers of institutions which offer undergraduate engineering programmes
2. The aim of the course is to provide an introduction to the study of game theory which has found wide applications in economics, political science, sociology, engineering apart from disciplines like mathematics and biology
3. The course would introduce to the fundamental tools of game theory, a few equilibrium concepts, apart from numerous exercises and applications
4. Knowledge of game theory would help students to understand and analyse real life situations such as market behaviour or voting in elections, apart from equipping them with analytical concepts which might be useful should they decide to pursue social sciences, engineering, sciences or managerial higher studies
5. This is an interdisciplinary course, hence not only social sciences but science and engineering departments of different universities can benefit from it
6. The six modules of the course are as follows,
 - a. Introduction to Game Theory
 - b. Strategic Games and Nash Equilibrium
 - c. Illustrations of Nash Equilibrium
 - d. Mixed Strategy Nash Equilibrium
 - e. Extensive Games and Nash Equilibrium
 - f. Illustrations of Extensive Games and Nash Equilibrium

COURSE DETAIL

Sl. and module No.	Module/ Lecture Topics	No. of (Total) Hours
1.	Introduction to Game Theory What is game theory? Theory of rational choice Interacting decision makers	2
2.	Strategic Games and Nash Equilibrium Strategic games: examples Nash equilibrium: concept and examples Best response functions Dominated Actions Symmetric games and symmetric equilibria	10
	Illustrations of Nash Equilibrium Cournot's model of duopoly market	14

NPTEL

<http://nptel.iitm.ac.in>

Humanities and Social Sciences

Pre-requisites:

10+2 level of
Mathematics

Additional Reading:

Microeconomic theory

Hyperlinks:

<http://www.economics.utoronto.ca/osborne/igt/>

Coordinators:

Dr. Debarshi Das
Department of
Humanities and Social
Sciences IIT Guwahati

3.	Bertrand's model of duopoly market Electoral Competition War of Attrition Auctions Accident Laws	
4.	Mixed Strategy Nash Equilibrium Introduction Strategic games with randomisation Mixed strategy Nash equilibrium: concept and examples Dominated Actions Formation of Players' beliefs	6
5.	Extensive Games and Nash Equilibrium Introduction to extensive games Strategies and outcomes Nash equilibrium Subgame perfect Nash equilibrium Backward induction	6
6.	Illustrations of Extensive Games and Nash Equilibrium Stackelberg model of duopoly markets Ultimatum game	2

References:

1. Osborne, M.J. An Introduction to Game Theory, Oxford University Press, 2004
2. Mas-Colell, A., M.D. Whinston and J.R. Green Microeconomic Theory, Oxford University Press, 1995
3. Gibbons, R. A Primer in Game Theory, Pearson Education, 1992