Course title: Game theory				
Course code: MPE 147	**No. of credits:** 4	**L-T-P:** 50-6-0	**Learning hours:** 56	
Pre-requisite course code and title (if any): MPE 131 Microeconomics				
Department: Department of Policy Studies				
Course coordinator: Dr. Soumendu Sarkar		**Course instructor** Dr. Soumendu Sarkar		
Contact details: soumendu.sarkar@teriuniversity.ac.in				
Course type: Core		**Course offered in:** Semester 2		

Course description:
Game Theory examines situations where the pay off for an individual agent depends on the actions of all the agents. If individuals can write a contract for sharing their payoff, the corresponding game is cooperative. Otherwise, it is non-cooperative. In this course we shall almost entirely deal with non co-operative games.

Course objectives: To acquaint students with the concepts and prominent applications of Game Theory. It also prepares students for advanced courses like MPE 141 (Microeconomics II) or MPE 135 (Collective Action and Environmental Management).

Course contents

S.No	Topic	L	T	P
1	Introduction to game theory			

2	Payoffs in game: Rational choice under uncertainity
	  a. Expected utility theory, risk aversion
	  b. Applications, risk sharing, insurance, option value
		6		

3	A more formal introduction to games
	  a. Extensive forms and normal forms
	  b. Strategies, dominant strategies and iterative elimination of strictly dominated strategies
	  c. Nash equilibrium
	  d. Applications of Nash equilibrium
		10	2	

4	Backward induction, subgame perfection, and forward induction
	  a. Analysis of Extensive-Form Games,
	  b. Backward induction
	  c. Subgame Perfection,
	  d. Applications.
	  e. Bargaining and negotiations,
	  f. Forward induction.
	  g. Applications.
		10	1	

6	Repeated game and cooperation	6	1	

7	Incomplete information
	  a. Bayesian Nash Equilibrium,
	  b. Auctions
	  c. Applications
		10	1	

8	Dynamic Games of Incomplete Information 6
	  a. Perfect Bayesian Equilibrium
	  b. Sequential Bargaining Under Asymmetric Information
		8	1	

9	Reputation			
	Total	**50**	**6**	**0**

Evaluation criteria:
1. 2 minor tests   30% each
2. Major exam   40%

Learning outcomes:
1. At the end of this course, students should be able to model strategic behaviour in different economic situations.
2. Also, students should be able to predict the outcomes of certain strategic models by applying standard equilibrium notions.

Materials:
Required text: R. Gibbons, Game theory for applied economists (G)

Suggested readings
1.P. Datta, Strategies and Games (PD)
2.D. Krepps, A course in Micro Economic Theory (DK)

Additional information (if any):

Student responsibilities: Attendance, feedback, discipline: as per university rules.

Course reviewers:

1. Professor Arunava Sen, Economics and Planning unit, Indian Statistical Institute, New Delhi

2. Professor Debasis Mishra, Economics and Planning unit, Indian Statistical Institute, New Delhi