Discipline Specific Elective 30 (DSE-30): Topics in Game Theory

Semester	Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
VI/VIII	Topics in Game Theory – ECON060	4	3	1	0	Class 12th with Mathematics	Game Theory and Strategic Interactions (ECON013)

Learning Objectives

The Learning Objectives of this course are as follows:

- This course deals with extensive form games. Students learn the concepts of subgame- perfect equilibrium, Bayesian and Perfect Bayesian equilibrium in static and dynamic forms.

Learning outcomes

The Learning outcomes of this course are as follows:

- The students will learn how to model multi-person decision making in an interactive setting.
- They will understand how to formulate different real-life situations as games and learn to predict the optimal strategies of players and how the players can exploit strategicsituationsfortheirownbenefit.

Syllabus

UNIT I: Extensive form games with perfect information (9 hours)
Extensive games with perfect information; strategies and outcomes; Nash equilibrium; subgame perfect equilibrium; backward induction in finite games; commitment; bargaining; Stackelberg's model of duopoly; a race; other illustrations

UNIT II: Simultaneous move games (9 hours)
Entry into a monopolized industry; electoral competition with strategic voters; committee decision-making; exit from a declining industry

UNIT III: Bayesian games (9 hours)
Strategies; Bayesian Nash equilibrium; Cournot's duopoly game with imperfect information; providing a public good; auctions; juries; other applications.

UNIT IV: Extensive form games with imperfect information (9 hours)
Strategies; Nash equilibrium; beliefs and sequential equilibrium; perfect Bayesian equilibrium; signaling games; applications.

UNIT V: Repeated Games (9 hours)
Payoffs, strategies, Nash equilibrium and subgame perfect equilibrium of repeated games

Recommended readings

- Martin J. Osborne, *An Introduction to Game Theory*, Oxford University Press, New Delhi,2004.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.