DEPARTMENT OF ECONOMCS
UNIVERSITY OF DELHI

Subject: Common Pool of GE

Sem.:   IV

Course & Code: Game Theory and Social Sciences ECON068
Duration (per week):

Date & Time   24/01/2024 at 2:00 PM

Venue: 116, Department of Economics, Delhi University

Convenor: Anirban Kar, Soumendu Sarkar

College Teachers

Name	Affiliation and Contact Details
Dr Shalini Saksena	Delhi College of Arts and Commerce
Manoj Kumar	Shyamlal College (Eve)
Dr Animesh Naskar	Hansraj College

The members present discussed and recommended the following structure.

General Elective (GE 18) Game Theory and Social Sciences

Semester	Course title and code	Credits	Duration (Per week)			Eligibility Criteria	Prerequisite
			Lecture	Tutorial	Practical/ Practice		
IV/VI/VIII	Game Theory and Social Sciences-ECON068	4	3	1	0	Class XII	Math in Class XII

Learning Objectives

The Learning Objectives of this course are as follows:

• This course will teach the basic elements of game theory with applications to political science and other social sciences.

• It will cover simultaneous games, extensive-form games, repeated games, and spatial models of elections.

• The course will also focus on using the logic of games to make inferences and arguments about political and social behavior, with readings on collective action, voting, bargaining, repeated interaction, war, and other Final Examples.

Learning outcomes

The Learning outcomes of this course are as follows:

• The students will learn how to apply 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 strategic situations for their own benefit.

• They will solve basic and intermediate games, including simultaneous-move and extensive-form games, as well as basic games of asymmetric information.

• The students can create and solve an original model designed to understand a social or political

problem of interest.

Syllabus

UNIT I: Rational choice; interacting decision-makers; the normal/strategic form (9 hours)

UNIT II: Dominant and dominated strategies; iterated elimination of dominated strategies; dominance solvability; best response functions; Nash equilibrium. (15 hours)

UNIT III: Extensive-form and simultaneous game, Strategic game and its application in social sciences, electoral competition; the war of attrition, auctions; mixed strategies; finding mixed strategy equilibria; symmetric games and symmetric equilibria; illustrations: reporting a crime; expert diagnosis (15 hours)

UNIT IV: Strictly competitive equilibrium and maximization (6 hours)

Recommended readings

- Primary Reading: Prajit K. Dutta, *Strategies and games: theory and practice*. MIT press, 1999 (2nd edition: 2022)
- Secondary Reading: 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.

Sectionwise reading suggestions

Unit I

PD 1.1-1.3; 3.1-3.2

MO 1.1-1.2; 2.1-2.5

Unit II

PD 3.3; 4.1-4.4; 5.1-5.4; (Chapter 6-7 optional)

MO 2.9; 2.8; 2.6-2.7; 3.1-3.2

Unit III

PD 2.1-2.5; Chapter 8 (Chapter 9 in 2nd edition)

MO 5.2; 7.1; 3.3-3.5; 4.1-4.5; 4.6; 2.10; 4.7-4.8

Unit IV

PD Chapter 10 (Chapter 11 in 2nd edition)

MO 11.1-11.3

Chapter-wise list of selected sections and exercises from Osborne:

Chapter-2 :

EXERCISE 112.1 (A coordination game)

EXERCISE 115.4 (Defending territory)

4.8 Illustration: reporting a crime