**Course Outlines**

**ECO 464: Game Theory**

**School Of Economics, Quaid-I-Azam University, Islamabad**


**Instructor:** Dr Anwar Shah
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**Office Hours:** 10.15 - 11:15 Monday to Thursday (or by appointment)


**Course Description**

Game theory is the study of multi-players decision problems. How individuals take decisions in a situation where his/her interests depend not only on own actions but on the actions of other people as well. Game theory provides the analysis of such strategic interactions. This subject is an introduction to the economic study of game theory. The main aim of this subject is to show how tools and techniques from game theory can be applied to interesting and relevant problems in economics and everyday life.

**Learning outcomes**

At the end of this course a student should understand
Strategic and non-strategic situation and the role of game theory in understanding the strategic situations
Modelling different strategic situations based on game theory
How situation like prisoner dilemma prevailed in real life and what we can do in ensuring cooperation.
Use game theory for designing polices and understanding behaviour.

**Required Book**

An Introduction to Game Theory by Martin J. Osborne
A Primer in Game theory by Robert Gibbons
Games of Strategy by Avinash. Dixit and Susan Skeath

**Other Books**

Game Theory for Applied Economists by Robert Gibbons
Introduction to Game Theory by Schecter S. and Ginits H.
Microeconomic Theory by Mas-Colell, Whinsten and Green (Chapters 7, 8 and 9)

**Course Contents**

Introduction: Game Theory vs. Traditional Decision Theory

Basic of Game theory:

Types of games: Simulations vs sequential

Static Game of Complete Information:

Games with pure strategy NE: Normal form of the games, Nash Equilibrium & Illustration

Games with no pure strategy NE: Exploring Mixed Strategy Equilibrium

Dynamic/Extensive games with perfect information:

Theory: Backward induction and subgame perfect Nash equilibrium

Illustrations: Stackelberg Model of Duopoly

Static Games with incoplete information

Static games of incomplete information: Static Bayesian Games and Bayesian Nash Equilibrium

Dynamic Games of Incomplete information

Information in Games: Signaling and Screening

Perfect Bayesian Equilibrium

Signaling games

Extensive games with imperfect information

Repeated games:

Two stage/ Finitely repeated games

Infinitely repeated games

Auctions and biddings

Behavioral Game Theory

**Assessment and Grading**

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|---|---|
| Assignments and Quizzes (4+4): | 16 (8 for quizzes and 8 for assignments) |
| Project/Term paper | 14 (Writeup= 9 and Presentation = 5) |
| Mid-Term Exam: | 30 |
| Final Exams: | 40 |
| --- | --- |
| Total: | 100 |