

Industrial and Management Engineering

IIT Kanpur

IME636: Introduction to Game theory

3-0-0-9

Course objectives: To develop skills in the analysis and design of games.

Prerequisites: A basic course in Probability and Statistics

Course contents:

Description of Game theory, concept of preferences and utility, representation of games in extensive form, normal form and coalition form, solution concepts for normal form games - dominance, Nash equilibrium, correlated equilibrium, applications - static models of oligopoly, extensive form game with perfect and imperfect information, refinements of Nash equilibrium in extensive form games - subgame perfect equilibrium, finite and infinite horizon alternating bargaining models, games with incomplete information - Bayesian games, Bayes Nash equilibrium as a solution concept, finitely and infinitely repeated games - trigger strategies, Cooperative games - description and solution concepts of Nash bargaining solution, Core and Shapley value, mechanism design - properties of mechanism and implementation.

Class schedule:

Monday: 12.00 noon. - 1.30 p.m. (Venue: C3, IME Building)

Thursday: 12.00 noon - 1.30 p.m. (Venue: C3, IME Building)

Instructor: Dr Sri Vanamalla V (email: vanamala@iitk.ac.in)

Grading:

Quizzes (2): $15 \times 2 = 30$

Mid-semester: 30

End-semester: 40

(There may be a slight variation in these weights which will be informed.)

Books:

(1) An introduction to Game theory: Martin J Osborne

(2) Game theory for applied economists: Robert Gibbons

(3) Game theory Analysis of conflict: Roger B Myerson

(4) Microeconomic theory: MasColler, Whinston and Green

5 September, 2017

Sd/- Sri Vanamalla V