

Artificial Intelligence and Data Science Department

Course Code:	Course Title	Credit
ADDOL7023	Game Theory for Data Science Lab	1

Lab Objectives:

1. To understand fundamental game theory concepts.
2. To apply game theory to real-world data science scenarios.
3. To analyze Nash equilibria in different types of games.
4. To investigate mixed strategies and their implications.
5. To learn game theory algorithms and computational tools.
6. To explore applications of game theory in data science.

Lab Outcomes: Learner will be able to

1. Gain a solid understanding of fundamental game theory concepts.
2. Develop the ability to apply game theory principles to real-world data science problems.
3. Analyze and identify Nash equilibria in various game scenarios.
4. Comprehend the implications and applications of mixed strategies in game theory.
5. Acquire practical skills in utilizing game theory algorithms and computational tools.
6. Explore and appreciate the wide range of applications of game theory in data science.

Index

Week	Lab Work	LOs	DOP	Grade /Marks	Sign
1	Prisoner's Dilemma	1, 3			
2	Exploring Games for Game Theory	1, 2, 3, 6			
3	Understanding and Implementation of Auctions	2, 3, 6			
4	Elimination of Dominated Strategy	1, 3			
5	Using Best Response Function to Find Nash Equilibria	1, 3			
6	Minimax Theorem and Minimax Strategies	1, 4, 5			
7	Perfect Information Games and Backward Induction	1, 5			
8	Repeated Games	1, 3			
9	Bayesian Nash Equilibrium	3, 4, 6			
10	Imperfect Information Games – Mixed Strategy Nash Equilibrium	3, 4, 5			
11	Implementation of Strategic Games (e.g., Tic Tac Toe, 8 Puzzle)	5, 6			

Signature :

Lab and Subject Teacher : Mr. Amit Singh