



Indraprastha College for Women University of Delhi

Course Name:	B.Sc.(H) Mathematics
Paper Title:	Linear Programming and Applications
Unique Paper Code:	
Semester:	VI
Faculty(s):	Dr. Pardeep Kumar
Year:	2023-24

Work Plan			
Unit No.	Learning Objective	Lecture No.	Topics to be Covered
I	Transportation Problem	1	Definition and formulation
		2	Methods of Finding Initial Basic Feasible Solution
		3	Northwest corner rule
		4	Least cost method
		5	Vogel's approximation method
		6	Vogel's approximation method
		7	Vogel's approximation method
		8	Dual
		9	Duality principle.
		10	Algorithm for solving transportation problems.
		11	Algorithm for solving transportation problems.
		12	Algorithm for solving transportation problems.
II	Assignment Problem	13	Mathematical formulation
		14	Theorems and Proofs
		15	Theorems and Proofs
		16	Hungarian method of solving.
		17	Hungarian method of solving.

		18	Hungarian method of solving.
III	Game Theory	19	Basic concept,
		20	Formulation and solution
		21	Two-people zero-sum games
		22	Two-people zero-sum games
		23	Games with mixed strategies
		24	Games with mixed strategies
		25	Games with pure strategies
		26	Linear programming method of solving a game
		27	Linear programming method of solving a game
		28	Graph Theory

Syllabus		
Unit	Contents	Contact Hours
I	Transportation Problem Definition and formulation; Methods of finding initial basic feasible solutions; Northwest corner rule. Least cost method; Vogel's approximation method; Algorithm for solving transportation problem.	12
II	Assignment Problem Mathematical formulation and Hungarian method of solving.	06
III	Game Theory Basic concept, Formulation and solution of two-person zero-sum games, Games with mixed strategies, and Linear programming method of solving a game.	10
	Total	28
Text Books/Suggested Readings:		
S. No.	Name of Authors/Books/Publishers	Year of Publication/ Reprint

1.	Bazaraa, Mokhtar S., Jarvis, John J., & Sherali, Hanif D. Linear Programming and Network Flows (4th ed.). John Wiley and Sons.	2010
2.	Hadley, G. Linear Programming. Narosa Publishing House. New Delhi.	1997
3.	Taha, Hamdy A. Operations Research: An Introduction (9th ed.). Pearson.	2007
4.	Thie, Paul R., & Keough, G. E. An Introduction to Linear Programming and Game Theory. (3rd ed.). Wiley India Pvt. Ltd.	2014

Paper Components			
Credits	Lecture (L)	Tutorial (T)	Practical (P)
6	5	1	0
Assessment Scheme			
S.No.	Component	Marking Scheme	Total Marks
1	Internal Assessment <ul style="list-style-type: none"> • Assignment/Quiz/Project/Presentation • Class Test • Attendance 	10 10 5	25
2.	Continuous Assessment (Tutorial) <ul style="list-style-type: none"> • Activity 1 • Activity 2 • Attendance 	NA NA NA	NA
3.	Practical <ul style="list-style-type: none"> • Continuous Assessment • End Term Written/Practical Exam • Viva 	NA NA NA	40
4.	End Semester Examination		75