

Curriculum Plan (ODD SEM 2026-27): B.Sc.(H) Maths V Sem

DSE-3 (ii): Linear Programming and Applications

Teacher's Profile Hari Kishan Bhardwaj Department of Mathematics, Kalindi College, University of Delhi, Delhi-110008 Mobile: +91-9868053327 Email: harikishan@kalindi.du.ac.in			Marks Distribution	Theory	90 Marks
				Internal Assessment	30 Marks
				Continuous Assessment	40 Marks
					Assignments -12 Marks
			Classes Assigned		Test - 12 Marks
					Attendance - 6 Marks
Lectures	3 Per Week				
	Tutorial	1 Per Week			
Reference		1. Bazaraa, Mokhtar S., Jarvis, John J., & Sherali, Hanif D. (2010). Linear Programming and Network Flows (4th ed.). John Wiley and Sons. Indian Reprint. 2. Hillier, Frederick S. & Lieberman, Gerald J. (2021). Introduction to Operations Research (11th ed.). McGrawHill Education (India) Pvt. Ltd. 3. Taha, Hamdy A. (2017). Operations Research: An Introduction (10th ed.). Pearson.			
	Week	Topics			
	1 st Week (28 JUL-01 AUG)	Linear programming problem: Standard, Canonical and matrix forms			
	2 nd Week (03-08 AUG)	Geometric solution, Convex and polyhedral sets, Hyperplanes, Extreme points			
	3 rd Week (10-15 AUG)	Basic solutions, Basic feasible solutions			
	4 th Week (17-22 AUG)	Correspondence between basic feasible solutions and extreme points.			
	5 th Week (24-29 AUG)	Simplex Method: Optimal solution, Termination criteria for optimal solution of the linear programming problem			
	6 th Week (31 AUG-05 SEP)	Unique and alternate optimal solutions			
	7 th Week (07- 12 SEP)	Unboundedness; Simplex algorithm and its tableau format.			
	8 th Week (14-19 SEP)	Artificial variables, Two-phase method, Big-M method.			
	9 th Week (21-26 SEP)	Duality Theory: Motivation and formulation of dual problem, Primal-Dual relationships			
	10 th Week (28 SEP-03 OCT)	Statements of the fundamental theorem of duality and complementary slackness theorem with examples.			
	11 th Week (05 -10 OCT)	Transportation Problem: Definition and formulation, Northwest-corner, Least-cost, and Vogel's approximation methods of finding initial basic feasible solutions			
	12 th Week (12-17 OCT)	Algorithm for solving transportation problem.			
	13 th Week (26-31 OCT)	Assignment Problem: Mathematical formulation and Hungarian method of solving.			
	14 th Week (02-07 NOV)	Game Theory: Two-person zero sum game, Games with mixed strategies, Formulation of game to primal and dual linear programming problems,			
	15 th Week (09–14 NOV)	Solution of games using duality.			
	16 th Week (16-20 NOV)	Revision			