

Course Code MAT2004	Operations Research	Course Type	LT
		Credits	3
Course Objectives: <ul style="list-style-type: none">To learn the concepts of Operations Research applied in business decision making			
Course Outcomes: At the end of the course, students will be able to <ul style="list-style-type: none">facilitate quantitative solutions in business decision making under conditions of certainty, risk and uncertainty.			
Student Outcomes (SO): a,e,j,k			
Module No.	Module Content	Hrs.	SO
1	Linear Programming Problems Formulation of linear programming problem – Simplex method – Big-M method – Two Phase method-Dual simplex method – Revised simplex method – Duality.	7	a,e,j,k
2	Integer Programming and Allocation Problems Formulation of Integer Programming Problem – Pure and Mixed Integer Programming Problems – Cutting-Plane Algorithm – Branch & Bound Algorithm. Transportation problem – Methods of basic feasible solution – Optimal solution – MODI Method. Assignment problem – Hungarian method-Travelling Salesman problem	9	a,e,j,k
3	Dynamic and Non-Linear Programming Problems Dynamic Programming – Principle of optimality- Optimal Sub-division problem – Shortest path problem – Solution of LPP by dynamic programming. Non-Linear Programming Problem – Kuhn-Tucker conditions – Wolfe’s modified simplex method.	9	a,e,j,k
4	Game Theory and Job Shop Scheduling Basic Terminologies of Game theory – Two Person Zero Sum Games – The Maximin - Minimax principle – Game with pure and mixed Strategies – Dominance property – Simplex method. Job Shop Scheduling: Processing n jobs through Two Machines – Processing n Jobs through k Machines – Processing Two Jobs through k Machines.	9	a,e,j,k
5	Queuing Models and Network Scheduling Queuing models –Poisson arrivals and Exponential service times – Single channel models and Multichannel models. Network scheduling: Guidelines for network construction – Critical Path Method (CPM) –Project Evaluation and Review Technique (PERT) - Critical Path Scheduling – Probability and Cost consideration in	9	a,e,j,k

	PERT.		
6	Guest Lectures by experts on contemporary topics	2	
	Total	45	
Mode of Teaching and Learning: Flipped Class Room, Video Lectures, Digital/Computer based models to augment lecture for practice/tutorial, 2 hours lectures by industry experts on contemporary topics			
Mode of Evaluation and assessment: Digital Assignments, Continuous Assessment Tests, Final Assessment Test and unannounced open book examinations, quizzes, student's portfolio generation and assessment, innovative assessment practices			
Text Book(s): <ol style="list-style-type: none"> 1. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, Fourth Edition, Third Indian Reprint 2004 2. Pradeep Prabakar Pai, Operations Research - Principles and Practice, Oxford Higher Education 3. S. S. Rao, Engineering Optimization Theory and Practice, Wiley Eastern Ltd., 2004. 			
Reference Book(s): <ol style="list-style-type: none"> 1. Hiller and Lieberman, Introduction to the Operations Research (8th Edition), Tata McGraw-Hill Publishers. 2. Gupta P.K, Hira D.S, Problem in Operations Research, S.Chand and Co, 2007. 3. S. D. Sharma, Operations Research, Kedamanth Ramnath & Co., 2006. 			
Recommendation by the Board of Studies on		22-4-2017	
Approval by Academic council on			
Compiled by		Dr.C.Vijayalakshmi & Dr.V.Prabhakar	