					API	
	L	Т	Р	Credit	PEND	
	3	0	0	9	- XI	
all see how simple mathematics Further, explore the different g Problems.						
y graphically and analytically.						
and Sequencing Problem. n and Minimax Principle for it.						
Learning Outcome						
unit helps to understand the amental concept and general						

Students will be able to apply

various methods to select and

execute various optimal strategies to

win the game. Minimax and

maximin principle to compute the

value of the game, when there is a

saddle-point.

Cour	Course Objective							
The c	The course deals with the basic idea of linear programming. We shall see how simple mathematics							
plays	plays a significance role in the development of these ideas. Further, explore the different							
appro	approaches to find the solution for the various Linear Programming Problems.							
Lear	Learning Outcomes							
Upon	Upon successful completion of this course, students will:							
• ha	• have different ways to solve the linear programming problem by graphically and analytically.							
• U	nderstand the nature of integer programming	5. 	tetion of Community Durble					
• be	• be able learn various different ways to solve the Transportation and Sequencing Problem.							
• De	• be able to apply several strategies to win the game and Maximin and Minimax Principle for it.							
No.	Topics to be Covered	Hours	Learning Outcome					
1	Linear Programming Problem: Definition of various terms related to LPP, Graphical method, Simplex Method, Big M and Two Phase Method, Degenerate LP problem, Duality in LPP, Dual Simplex Method.	18	This unit helps to understand the fundamental concept and general mathematical structure and solution technique of a linear programming problem.					
2	Integer Programming: Pure and Mixed Integer, Gomory's cut, Gomory's constraints, Fractional cut method.	4	This unit will help students to apply cutting plane methods to obtain optimal integer solution value of the variable in a linear programming problem.					
3	Transportation Problem: NWCR, Matrix Minima and Vogel's Approximation Methods, Test for Optimality (MODI Method), Unbalanced Transportation Problem. Assignment Problem: Variation in Assignment Problem, Unbalanced Assignment Problem.	10	Students will recognize and solve the transportation and assignment problem involving a large number of shipping routes. Handle the problem in case of degenerate and unbalanced.					
4	Sequencing Problem: Processing n jobs through 2 machines, Processing n jobs through k machines, Processing 2 jobs through k machines.	4	Students are able to solve some specific problem of scheduling n jobs on k machines.					

6

Theory of Games: Saddle points, Two-

person zero sum games with and without

saddle-points, Maximin and Minimax

Principle, Pure and mixed strategies,

Graphical solution of $2 \ge n$ and $m \ge 2$

games, Dominance Property, Simplex

method of solving $m \ge n$ rectangular

Name of Course

Operations Research

Course

Type

ESO

5

games.

Course

Code

MCE301

Text Books:

- 1. Kwanti Swarup, P. K. Gupta and Man Mohan: "Operations Research", Sultan Chand & Sons, 2017.
- 2. Hamdy A. Taha: "Operations Research-An Introduction", Pearson, 2016.

Reference Books:

- 1. Hadley G.:: "Linear Programming", Narosa, 2002.
- 2. Frederick S. Hillier and Gerald J. Lieberman: "Introduction to Operations Research", McGraw Hill, 2009.