

YEAR – III	OPERATIONS RESEARCH For the students admitted from the year 2020	EMT618A
SEMESTER –VI		Hrs / Week: 6
ELECTIVE-IV		Credit: 4

OBJECTIVES

The course aim is to introduce linear programming, transportation methods, assignment models, sequencing problem, game theory and network analysis in project planning.

COURSE OUTCOMES:

The students after undergoing this course will be able to

CO1: Use knowledge of operational research, LPP.

CO2: Formulate physical problems as operational research using assignment models.

CO3: Understand analogies between transportation problem, phenomena in operational Research.

CO4: Classify operational research, game theory, interpret the solutions.

CO5: Interpret solutions in network analysis.

SEMESTER VI	COURSE CODE: EMT618A		COURSE TITLE: OPERATIONAL RESEARCH													HOURS 6	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES (PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)										MEAN SCORE OF CO'S	
	P O 1	P O 2	P O 3	P O 4	P O 5	P S O 1	P S O 2	P S O 3	P S O 4	P S O 5	P S O 6	P S O 7	P S O 8	P S O 9	P S O 10		
CO1	4	3	2	3	3	3	4	4	3	2	3	3	2	2	3	2.9	
CO2	4	3	2	2	2	3	4	4	3	2	2	3	2	3	3	2.8	
CO3	5	4	4	2	2	2	5	5	3	4	3	4	2	3	3	3.4	
CO4	4	4	3	3	3	2	5	5	4	3	2	4	2	3	2	3.3	
CO5	5	4	3	3	3	2	5	5	4	3	3	4	2	3	2	3.4	
Mean Overall Score															3.2		

Result: The Score of this Course is 3.2 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very poor	Poor	Moderate	High	Very High

This course is having **HIGH** association with programme outcomes and programme specific outcomes.

UNIT - I : LINEAR PROGRAMMING

Definitions of OR - formulations of Linear programming problem - Graphical methods of solution - The simplex method - Artificial variables techniques - The Big-M method.

UNIT - II : TRANSPORTATION METHODS

Definitions of the transportation model - Formulation and solution of transportation models - North-west corner rule - Least cost method - Vogel's approximation method - Solution of transportation - MODI method.

UNIT - III : ASSIGNMENT MODELS

Definition of Assignment models - Mathematical representation of assignment model- Solution of the assignment model - The Hungarian methods for solution of the assignment models – unbalanced assignment problem.

SEQUENCING PROBLEM

Sequencing problems – Johnson's Algorithm- processing 'n' jobs through two machines - processing 'n' jobs through three machines - processing two jobs through 'm' machines .

UNIT - IV : GAME THEORY

Definitions - Rules for game theory - Rule 1 look for a pure strategy - Rule 2 reduce game by dominance - Rule 3 Solve for mixed strategy - Mixed strategies (2x2 games) - Mixed strategies (2xn games & mx2 games) - mixed strategies (3x3 or higher games).

UNIT - V : NETWORK ANALYSIS

Basic tools and techniques of project managements - Network logic - Numbering the events - Activity on node diagram - Critical path method - Programme evaluation and review technique [PERT].

TEXT BOOK:

1. Prem Kumar Gupta, D.S. Hira [2008], "Operation Research's".
Unit-I: 1.2, 2.2, 2.3, 2.10, 2.11, 2.11.1, 2.11.2,
Unit-II: 3.2, 3.4
Unit-III:4.1-4.6, 5.1, 5.4-5.7
Unit-IV: 8.4.2 – 8.4.8
Unit-V: 14.4-14.9.

REFERENCE BOOK:

1. Operation Research", Dr.S.J.Venkatesan, [2012], Sri Krishna Publications.