SYLLABUS: AS PER BOARD OF STUDIES R-2015 W.E.F. 2017 - 2018

15UME504 – OPEARTIONS RESEARCH

UNIT I – LINEAR MODEL **9**

Introduction to OR - Meaning and scope – characteristics - modes in OR LPP-formulation Graphical method - Simplex method - Big M method application in business - merits and demerits.

UNIT II – TRANSPORTATION AND ASSIGNMENT MODEL **9**

Transportation model - basic feasible solution - formulation solving a TP. Assignment models - formulation - solution. Sequencing Problems - Processing 'n' jobs through two machines and three machines.

UNIT III – NETWORK MODELS **9**

Network models - Basic Concepts - Construction of Networks - Shortest route - Minimal spanning tree - Maximum flow models - Project Network - CPM and PERT.

UNIT IV – INVENTORY MODEL AND REPLACEMENT MODEL **9**

Types of Inventory - EOQ - ERL- Deterministic inventory problems - selective inventory control techniques. Replacement of items that deteriorate with time - value of money changing with time - not charging with time - Optimum replacement policy - Individual and Group replacement.

UNIT V – QUEUING THEORY AND GAME THEORY **9**

Queuing models - Queuing systems and structures - notation - parameter - single server and multi server models - Poisson input - Exponential service - Constant rate service - Infinite population. Game theory - Two person zero sum games, maximin - minimax principle - saddle point - value of the game. Mixed - pure strategies, Dominance property - Arithmetic method - Graphical method - Simulation.

TOTAL: 45 PERIODS

OBJECTIVES

- To familiarize knowledge about optimization and utilization of resources.
- To impart knowledge on operations research techniques in industrial operations.

CONTENTS BEYOND SYLLABI:

- Non Linear Model

COURSE OUTCOMES
After completion, the student will be able to:
i. Analyze the optimum solution of Linear Model by applying the knowledge of Simplex and Graphical method. (Analyze).
ii. Analyze the optimum solution of Transportation and Assignment problems. (Analyze)
iii. Analyze the optimum solution of network model by applying the knowledge of various mathematical techniques. (Analyze)
iv. Analyze the various replacement and inventory problems of manufacturing sector. (Analyze)
v. Examine various queuing and game theory problems to find optimal solution. (Analyze)

TEXT BOOKS

1. Sundaresan.V, Ganapathy Subramanian.K.S, Ganesan.K, "Resource Management techniques (Operations Research)", AR Publications, 10th Edition, 2016.
2. Taha H.A, "Operation Research", Pearson Education, Sixth Edition, 2003.

REFERENCE BOOKS

1. Srinivasan.G, "Operations research principles and applications", PHI (EEE), 2007.
2. Wayne.L.Winston, "Operations research applications and algorithms", Thomson learnin, Fourth Edition, 2007.
3. Panneerselvam, "Operations Research", Prentice Hall of India, 2003.
4. Hira and Gupta "Problems in Operations Research", S. Chand and Co, 2002.