

**UNIT I****Introduction to OR and LPP**

Introduction, formulation of LPP, Graphical solution, The standard form of linear programming problems, Basic feasible solutions, unrestricted variables, Simplex Method, Big-M method, II-Phase method, Degeneracy, alternative optima, unbounded solutions, infeasible solutions, Dual

**UNIT II****Transportation and Assignment Problems**

North-West corner method, Least-Cost entry method, Vogel's method, Optimality of Transportation Problem, Hungarian method

**UNIT III****Network Analysis**

Minimal Spanning tree method, Shortest Route Problems, Maximum flow problems, CPM, PERT, Branch and Bound Algorithms cutting plan algorithm.

**Smoothing and Allocation**

Development of software for the techniques, Exposure to Project Management Packages

**UNIT IV****Queuing Theory**

Types of queuing system, Elements of Queuing model, Role of Poisson and exponential distribution in queuing, pure birth and death model, MM1 models

**UNIT V****Modeling and Simulation**

Use of Computer in modeling real life situations, Distribution functions, Random number generation, Selection of input probability distribution, Design of simulation models Experimental design, Introduction to simulation languages Programming tools for developing simulation models.

**Reference Book(s):**

1. Quantitative Techniques in management, N. D. Vohra , Tata McGraw Hill
2. Operations Research – An Introduction, Hamdy A Taha, Prentice Hall of India , New Delhi.
3. Introduction to Operations Research by HILLIER/LIEBERMAN, Tata McGraw Hill
4. Operations Research by R Panneerselvan, Prentice Hall of India.
5. Operations Research: Theory and Application, J. K. Sharma, Macmillan publication

**Practical(s):**

1. Simplex method using Ms Excel
2. N-W corner method
3. LCM
4. MODI method
5. Exponential distribution
6. Poisson distribution
7. Random number generation
8. Floyd's algorithm
9. Dijkstra's algorithm
10. Simulation model using MATLAB.