AGRI 321 (ELECTIVE-III)   **OPERATIONS RESEARCH**   **3(2+1)**

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. Floyed's algorithm
9. Dijkstra's algorithm
10. Simulation model using MATLAB.