

GUJARAT UNIVERSITY
K. S. SCHOOL OF BUSINESS MANAGEMENT
[Five Years' (Full-time) M.B.A. Integrated Degree Course]
Third Year B.B.A. (SEM – VI)
KS_M_CC - 365
Operations Research

3 credit course

Objective:

The management carries out the key managerial functions of planning, organizing, directing and controlling. It is engaged in the continuous process of decision making. The objective of this course is to understand model building of the given situation in mathematical terms and then analyzing it to take decisions.

MODULE: 1 Operation Research: An overview **(20%)**

Linear Programming Problem-I

- Definition, assumptions
- Mathematical model of linear programming problem
- Limitations and uses
- Formulation and graphical solution

MODULE: 2

Linear Programming Problem-II **(20%)**

- Simplex Method to get solution of linear programming problem
- Big-M Method
- Two Phase Method
- Dual Simplex Method
- Related Examples

MODULE: 3

Linear Programming Problem-III **(20%)**

- **Duality**
Definition, shadow prices, dual primal relation, business applications. Related examples
- **Sensitivity Analysis**
Meaning, business applications, different issues in practice. Related examples
- **Application based on Computer Package:**
Solution of different operations research problems through computer packages
NOTE - For exam, output of problem solution can be asked for interpretation.

MODULE: 4 **(20%)**

Transportation Problem

- Definition, assumptions
- Mathematical model of transportation problem, limitations and uses
- Different methods to get feasible solution like: North West Corner Method, Matrix Minima Method and Vogel's Approximation Method
- Modified Distribution Method to get optimal solution
- Different types of transportation problems like: Unbalanced, Degeneracy, Prohibited Routes, Maximisation
- Related examples

Transshipment problem

- Meaning
- Different applications of transshipment problems
- Related examples

MODULE: 5

(20%)

Assignment Problem

- Definition, assumptions
- Mathematical model of assignment problem
- Limitations and uses
- Hungarian Method to get an optimal solution
- Different types of assignment problems like: Unbalanced, Degeneracy, Prohibited Routes, Maximisation
- Extension of assignment problem: Travelling Salesman Problem and Crew Assignment Problem
- Related examples

No of lectures in semester: Approximately 40 to 45 Hrs.

Assignment: Minimum 3 Assignments

Evaluation Pattern:

Continuous Evaluation	30%
Mid-Sem. Exam	20%
End-Sem. Exams	50%

Reference Books:

- Quantitative Techniques in Management- N.D. Vohra-Tata McGraw-Hill
- Operation Research-J.K. Sharma-Macmillan
- Operation Research- R. Panneerselvam- Prentice Hall India
- Operations Research- Prem Kumar Gupta, D.S. Hira- S.Chand
- Operations Research- Pai- Oxford