

# GUJARAT UNIVERSITY

K. S. SCHOOL OF BUSINESS MANAGEMENT  
[Five Years' (Full-time) Integrated Degree Course]

## Semester-7 [M.Sc. (CA & IT)]

**Subject Code: - KS\_C\_CC-473**

**Subject Name: - Operations Research**

**Course Credit: - 3**

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### Objective:

The Objective of this course is to impart knowledge of scientific technique for solving complex of decision making problem. The objective is threefold – to impart the rigor of theory, to develop skills in analyzing problems and to inculcate the attitude of implementing well thought out solutions to decision problems.

Unit No.	Course Content	Weight-age (%)
1	Formulation of Linear Programming Problem. Solution through graphical method, Simplex method, Big M method with special cases. Duality, Dual simplex method.	(20%)
2	Transportation Problem: Formulation of Transportation problem as Linear programming model, Initial solutions, MODI method, Special cases, Transshipment problem.	(20%)
3	Assignment problem: Formulation of Assignment problem as Linear programming model, Hungarian Method, Special cases, Crew assignment.	(20%)
4	<b>Network Models:-</b> Introduction to network models: Shortest-Path Model, Minimum Spanning Tree Problem, Maximal Flow Problem <b>Problem solving</b> solve shortest path problem using Dijkstra's algorithm solve minimum spanning tree problem using Kruskal's algorithm and PRIM's algorithm formulation of flow problem as linear programming model solve flow problem using MFP(maximum flow problem) algorithm.	(20%)
5	PERT and CPM:-PERT/CPM Networks: Scheduling the Activities, Redundancy removal in Precedence Relationships, Rules for constructing PERT and CPM Network , Determination of Early Start and Latest completion Times, Determination of the Critical Path, Project completion time, Determination of the Float: Total, Interfering, Free and Independent, Determination of the Critical Path in PERT network and project completion time.	(20%)

**Recommended Lecture Scheme:** Approximately 40 to 45 hours in a semester

**Recommended Practical Scheme:** Not Applicable

**Assignment:** Minimum five assignments should be given.

**Main Reference Books:**

1. Quantitative Techniques in Management By N. D. Vohra
2. Operation Research By J. K. Sharma
3. Operation Research By R. Panneerselvam

**Reference Books:**

1. Quantitative Methods for Beginners By Anderson, Sweeney Williams
2. Operations Research Principles & Practice By Pradeep Prabhakar Pai