

## MFC 3.1 Operations Research

### Objective

This course aims at developing an understanding of the applications of operations research techniques to business and industry.

### Course Inputs

1. **Operations Research:** Concept and significance of operations research; Evolution of operations research; Steps in designing operations research studies; Operations research models.
2. **Linear Programming and its Applications:** Graphic method & simplex method; Duality problem; Transportation problem; Assignment problem.
3. **Introduction to Other Types of Programming:** Goal programming; Integer Programming; Dynamic programming; Non-linear programming (introductory only).
4. **Waiting Line Models:** Waiters and services; mathematical distribution of queues; Basic models of queuing theory and applications.
5. **Inventory control:** Deterministic models and probabilistic models.
6. **Game Theory:** Zero sum game; pure and mix strategies; Criteria of sharing strategies.
7. **Simulation:** Application of Simulation techniques; Monte-Carlo approach.
8. **Network Analysis:** Introduction to PERT and CPM; Application areas of PERT and CPM.

### Suggested Readings

- Agarwal J.D. and Sagarika Ghosh: Quantitative Techniques for Financial Analysis, Indian Institute of Finance, New Delhi.
- Billy, E. Gillett: Introduction to Operations Research - A Computer Oriented Algorithmic Approach, Tata McGraw Hill Publishing Ltd., New Delhi.
- Lucey T: Quantitative Techniques, D.P. Publications, London.
- Sharma J.K.: Operations Research - Theory and Applications, Macmillan India Ltd., New Delhi
- Sharma, K.R.: Quantitative Techniques and Operations Research; Kalyani Publication, Ludhiana
- Sharma, S.C., Shenoy, G.V., Srivastava, U.K.: Quantitative Techniques for Managerial Decisions, Wiley Western Ltd., New Delhi
- Taha, Hamdy A: Operations Research - An Introduction, Prentice Hall, Delhi
- Vazsonyi, Andrew and Herbert Spriner: Quantitative Analysis for Business, Prentice Hall, Delhi.
- Vohra, N.D.: Quantitative Techniques in Management, Tata McGraw-Hill, New Delhi.
- Wagner, H.M: Principles of Operations Research, Prentice Hall, Delhi.

Wasteman, Terry J. and Parramor Keith: Quantitative Methods in Finance, International Thompson Business Press.