STAT- 921 Applied Operations Research (3 Credit Hours)

1. Objectives

This course aims to introduce students to the advance statistical and optimization methods used for operation research with diverse applications.

2. Course Contents

Linear programming: simplex algorithm, sensitivity analysis, duality theory. Network analysis: shortest route problem, minimal spanning tree algorithm, maximal flow model, PERT, critical path method (CPM). Integer Programming: the branch and bound technique, functions with N possible values. Non-linear programming techniques: quadratic programming, Wolfe's method, Beale's method, separable convex programming, piece-wise linear programming. Queueing theory. Sequencing. Inventory management: Inventory control and techniques. Some advanced topics in programming. Related applications/ computations with R.

3. Recommended Books

i. Krajewski, L.J. and Ritzman, L.P. Operations Management: Strategy and Analysis, Prentice Hall, London (2008).
ii. Taha, H.A. Operations Research, Prentice Hall, London (2002).
iii. Hillier, F., and Lieberman, G., Introduction to Operations Research, McMillan, London (1998).
iv. Gupta, P.K. and Hira, D.S. Operations Research, S. Chand and Co., New Delhi (1994).

4. Outcomes

On successful completion of this course, students will be able to implement the statistical and optimization methods over the diverse applications related to operation research.