Approval: 2nd Senate Meeting

MA641 Operations Research

Credit: 3-0-0-0

Prerequisites: None

Students intended for: Ph.D./ M.S./B.Tech

Elective or Core: Elective Semester: Odd/Even: Even

Course content:

- Introduction to Operations Research, Models and Modelling in Operations Research, Graphical Method, Simplex Method and its variants. [10 hours]
- Sensitivity Analysis, Duality and Post-Optimal Analysis, Advanced Linear Programming: Bounded Variables, Parametric Linear Programming, Revised Simplex Algorithm, Goal Programming, Dual Simplex Method, Integer Linear Programming. [12 hours]
- Transportation Model and its Variants: Balanced and Unbalanced Transportation Problem, Transhipment, Assignment Problem: Auction and Hungarian Method, unbalanced assignment problem. Sequencing Problem and Variants: Algorithms for processing n-jobs through m-machines.Traveling Salesman Problem, Heuristics and Branch and Bound and Gomory's Algorithms. [12 hours]
- Project Evaluation and Review Technique, Critical Path Method. [6 hours]

Text & Reference Books:

Saul I. Gass, "*Linear Programming: Methods and Applications*", Dover publications (2010).

Hamdy A. Taha, "Operations Research: An Introduction", Pearson Education (2008).

Don T. Phillips, A. Ravindran, James J. Solberg, "*Operations Research: Principles and Practice"*, John Wiley & Sons (1987).

George Bernard Dantzig, "*Linear Programming: Theory and extensions"*, Princeton University Press, 1998.

G. Hadley, "*Linear Programming"*, Addison-Wesley (1962).

Michael W. Carter, Camille C. Price, Camille C. Price, "*Operations Research"*, CRC Press (2000).

Frederick S. Hillier, Gerald J. Lieberman, "*Introduction to operations research"*, McGraw-Hill (2001).