4. Optimization Techniques

L-T-P 3-0-0 Cr. – 3

Objective:

1. To understand the principles of Optimization Techniques.
2. To be familiar with the different optimization techniques and their Implementations.

MODULE – I

Mathematical preliminaries, Linear algebra and matrices, Vector space, eigen analysis, Elements of probability theory, Elementary multivariable calculus

MODULE – II

Linear Programming: Introduction to linear programming model, Simplex method, DualityKarmarkar's method.

MODULE – III

Unconstrained optimization: One-dimensional search methods, Gradient-based methods, Conjugate direction and quasi-Newton methods

MODULE – IV

Constrained Optimization Lagrange theorem, FONC, SONC, and SOSC conditions, Non-linear problems : Non-linear constrained optimization models, KKT conditions Projection methods

Outcome:

1. Technical knowhow of the optimization techniques for real time applications.

Books Recommended:

1. An introduction to Optimization by Edwin P K Chong, Stainslaw Zak
2. Nonlinear Programming by Dimitri Bertsekas