IMQT1002 QUANTITATIVE METHODS - I (3-0-0)

Course Objectives:

1. To learn adequate theoretical; concept of Quantitative techniques in various applied field in management decision making
2. To understand role of optimization techniques in managerial decision making
3. To understand the applications of various quantitative techniques in managerial setting.

Module-I: Linear Programming:

Basic concept; Structure of Linear Programming Model; Application areas of Linear Programming. General Mathematical Model of Linear Programming Problem; Guidelines on Linear Programming Model Formulation; Examples of LP Model Formulation in various functional areas of management; Graphical Solution Method of LP Problems, The Simplex Method(Maximization Case; Minimization Case-Two Phase Method & Big M Method).

Module-II: Transportation Problem:

Transportation Problem; Methods for Finding Initial Solution (North-West Comer Method, Least Cost Method, Vogel's Approximation); Test of Optimality- MODI Method Assignment Problem: Assignment Problem, Solution Methods of Assignment Problem- Hungarian Method for solving Assignment Problem; Variations in the Assignment Problem- Multiple Optimal solutions, Maximization Case in Assignment Problem, Unbalanced Assignment Problem, Restrictions on Assignments.

Module-III: Decision Theory and Decision Tree:

Steps of Decision-making Process; Types of Decision Making Environment, Decision Making under Uncertainty (Optimism Criterion, Pessimism Criterion, Equal Probabilities criterion, Coefficient of Optimism Criterion, Regret Criterion); Decision Tree Analysis, Decision Making with Utilities.

Course Outcomes:

CO-1: Interpret Fundamental Concepts of Linear Programming.
CO-2: Evaluate and Solve Transportation Problems.
CO-3: Analyse and Solve Assignment Problems.
CO-4: Demonstrate Decision-Making Skills in Quantitative Environments.

Books:

- Gupta & Hira, Operations Research, S.Chand.
- Sharma,Operations Research, Macmillan