MBQT1001 QUANTITATIVE TECHNIQUES (3-0-0)

Course Objectives:

1. To lay an adequate theoretical foundation to study various applied fields in statistics and decision science.
2. To understand role of quantitative techniques in managerial decision making.
3. To understand applications of various quantitative techniques in managerial settings.

Module-I: Statistical Methods:
Measures of central tendency and dispersion: Standard Deviation, Simple Correlation, calculation of correlation coefficient, probable error, Rank correlation. Regression: Linear regression, calculation of regression coefficients,

Module II:
Linear Programming: Concept, Formulation & Graphical and Simplex Solution, **Assignment Models:** Concept, Flood's Technique / Hungarian Method, applications including restricted & multiple assignments. **Transportation Models:** Concept, Formulation, Problem types: Balanced, Unbalanced, Minimization, Maximization Basic initial solution using North West Corner, Least Cost & VAM, and Optimal Solution using MODI.

Module-III:
Queuing Theory: Concept, Single Server (M/M/I,), Markov Chains & Simulation Techniques: Markov chains: Applications related to management functional areas, **Decision Theory:** Concept, Decision under risk (EMV) & uncertainty, **Game Theory**: Concept, Two players zero sum game theory with dominance, Pure & Mixed Strategy.

Course Outcomes:

CO-1: Demonstrate proficiency with statistical analysis of data. To lay adequate theoretical foundation to study various applied fields in statistics. To know how global business decisions depends on the statistical analysis of data and specific relationship between two or more variables.

CO-2: Develop the ability to build and assess data-based models. Quantitative analysis of data, problem solving approach and use of mathematical techniques.

CO-3: Recognize the importance and value of Operations Research and linear programming in solving practical problems in real business world. Interpret the transportation models' solutions and infer solutions to the real-world problems. Optimize the allocation of resources to Demand points in the best possible way using various techniques and minimize the cost or time of completion of number of jobs by number of persons.

CO-4: Recognize and solve game theory and Markove's chain. Know when simulation and dynamic programming can be applied in real world problems.

CO-5: Learn the context around which decisions must be taken, evaluate all factors involved developing possibilities, how to assess each possibility against set criteria to identify the best option and then how to develop that into a successful decision. Develop leadership quality to handle projects in real situation by using scientific tools, and implement suitable quality control measures.

Text Books

1. Quantitative Techniques for Management, Levine, Krehbiel, Berenson, Pearson
2. Quantitative Techniques in Management by N.D. Vohra Tata, McGraw Hill
3. Quantitative Techniques-Davis.B, Oxford
4. Operations Research by R. Pannerselvam, Prentice Hall
5. Statistics for Business and Economics; R P Hooda, Vikas
6. Operations Research by Nita Shah, Ravi Gor, Hardik oni, PHI
7. Business Statistics : J K Sharma, Vikas