

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VII

PRODUCTION ENGINEERING

Subject Name: **Optimization Methods**

Subject Code: **172503**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
4	2	0	6	70	30	30	20

Sr. No	Course Content	Total Hrs.
1.	Operations Research: An Introduction History, Definition, scope & phases of operations research, Models and Modeling in OR, Methodology and Applications of OR, Computer soft wares for OR.	4
2.	Linear Programming Characteristics of Linear Programming (LP) problem, Mathematical formulation of LP Problems, Assumptions of LP Models, Graphical solution for LP problem, Special Cases in LP, Simplex algorithm- Two Phase Method, The Big-M Method, Dual Simplex Method, Duality in linear Programming, Sensitivity Analysis - Change in (i) Objective function coefficient, (ii) Availability of resources, (iii) input output coefficient and addition of new variable.	20
3.	Transportation Problem Mathematical Model, Methods for finding Initial & Optimal solution, Variations in transportation problem, Maximization & Transshipment Problems.	8
4.	Assignment Problem Mathematical Model, Hungarian Method, Variations in Assignment problem, Traveling Salesman problem.	6
5.	Theory of Games Two person zero sum games, Pure and Mixed strategies, Principle of Dominance, Solution Methods- Algebraic method, Arithmetic method, graphical method, Matrix method, LP method.	8

6.	Queuing Theory The Structure and Performance Measures of a Queuing System, Probability Distributions in queuing systems, Single server queuing models.	8
7.	Simulation Nature and meaning of simulation, Types of simulation, Advantages and Disadvantages of simulation, Monte Carlo simulation, Random number Generation, Simulation of queuing processes, Role of Computers in Simulation, Applications of simulation.	8

Text Books:

1. Operations Research, J. K. Sharma, MACMILLAN
2. Operations Research, A.P.Verma, S.K. Kataria & Sons., new Delhi

Reference Books:

1. Quantitative Techniques in Management, N. D. Vohra, TMH
2. Operations Research, V.K. Kapoor, S CHAND
3. Operations research, Taha, TMH Publications