

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. (CIVIL) – (Branch-49)-Construction Management Year – I (Semester – II) (W.E.F. January 2013)

1724905: Major Elective – II Operational Research

Sr. No.	Course Content
1	Introduction Introduction to Operations Research: Basics definition, scope, objectives, phases, models and limitations of Operations Research. Linear Programming Problem ,Formulation of LPP, Graphical solution of LPP. Simplex Method, Artificial variables, big-M method, two-phase method, degeneracy and unbound solutions.
2	Transportation Problem Transportation Problem. Formulation, solution, unbalanced Transportation problem. Finding basic feasible solutions,“ Northwest corner rule, least cost method and Vogel’s approximation method. Optimality test: the stepping stone method and MODI method.
3	Assignment and Sequencing Assignment model. Formulation. Hungarian method for optimal solution. Solving unbalanced problem.
4	Dynamic Programming and Game Theory Dynamic programming. Characteristics of dynamic programming. Dynamic programming approach for Priority ,Management employment smoothening, capital budgeting, Stage Coach/Shortest Path, cargo loading and Reliability problems Games Theory. Competitive games, rectangular game, saddle point, minimax (maxi min) method of optimal strategies, Replacement and Inventory Models Replacement of Items that deteriorate whose maintenance costs increase with time without change in the money value. Replacement of items that fail suddenly: individual replacement policy, group replacement policy Inventory models. Inventory costs. Models with deterministic demand

Tutorials:-

1. Assignment work is based on above subject contents.

Reference:

- 1 Operations Research, P. Sankara Iyer, Tata McGraw-Hill
2. Operations Research, A.M. Natarajan, P. Balasubramani, A. Tamilarasi , Pearson Education
3. Operations Research Theory & Applications , J K Sharma., Macmillan India Ltd,
4. Operational Research ,Kalavathy S., Vikas Publishing
5. Quantitative Techniques in Management ,Vohra, N.D. , Tata McGraw Hill Co., Ltd ,