Gautam Buddha University, Greater Noida

School of Engineering (Mechanical Engineering)

Degree	Course Name	Course Code	Marks:100
M. Tech.	Operation Research	MEE 505	SM+MT+ET 25+25+50
Semester	**Credits**	**L-T-P**	**Exam.**
I / II	4	3-1-0	3 Hours

Unit - I

Linear Programming: Graphical and simplex method; Sensitivity analysis in linear programming; Computer application in linear programming. **(07 Hours)**

Unit - II

Network analysis: Transportation models; Transshipment models; Maximal flow model; Shortest route model; Minimum spanning tree; Project management; Computer application in network analysis. **(08 Hours)**

Unit - III

Advanced Topics in Linear Programming: Duality and its application; Parametric programming; Integer programming; Linear fractional programming; Goal programming; Sensitivity analysis. **(08 Hours)**

Unit - IV

Dynamic Programming: Basic concept; Development of dynamic; Programming; continuous state dynamic programming; Multiple state variable; stochastic system. **(08 Hours)**

Unit - V

Non Linear Programming: Unconstrained optimization; Constrained optimization with equality constraints; Constrained optimization with inequality constraints; Optimization by cutting plane method; Optimization by geometric programming. **(08 Hours)**

Unit - VI

Algorithms: Genetic algorithm; Taboo search; Simulating Annealing.

(06 Hours)

Recommended Books:

1. Operation Research; Ravindran; Phillips & Solberg; Wiley India Edition.
2. Operation Research; Hira & Gupta; S. Chand & Company Ltd.
3. Operation Research; A. M. Natrajan; P. Balasubramani; A. Tamilarasi; Pearson Prentice.
4. Operation Research; S. D. Sharma; Prentice Hall of India.