Operation Research (DSE)	**4**	**3**	**1**	**0**		**Linear Algebra, Linear Programming**

Learning Objectives

This course should help the students to understand the nature and scope of decision making affairs and apply different operation research techniques to industrial problems. This course provides understanding to formulate shortest route problems, network modal and various dynamic programming applications. Also it provides students to choose a suitable operation research technique to solve many real life problems.

Learning outcomes

- Formulate various operation research models
- Learn to relate OR modals with many real life situations.
- Learn network models using CPM and PERT.
- Formulate integer programming algorithms for nonlinear models.
- Able to simulate various optimization problems using OR techniques

SYLLABUS

Unit I Introduction of OR, Formulation of basic OR modals: traveling salesman problem, inventory models, shortest route algorithm (9 hours)
Unit II Network Modal, Shortest route problems, CPM and PERT, Critical Path Computation, Construction of time schedule, Linear programming formulation of CPM, PERT calculations (12 hours)
Unit III Integer linear programming, applications of integer programming: Capital Budgeting, Fixed Charge Problem, Branch & Bound Method to traveling salesman problem, cutting plane algorithm (12 hours)
Unit IV Deterministic Dynamic Programming, DP Applications: Investment Modal, Inventory Modal, Static Economic order quantity EOQ models. (10 hours)

Essential/recommended readings

1. *Introduction to Operations Research,* F. S. Hillier and G. J. Lieberman, (9th Edition), Tata McGrawHill, Singapore, 2009.
2. *Operations Research, An Introduction,* Hamdy A. Taha, (8th edition), Prentice-Hall India, 2006.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE):