Subject Code : HC313

OPERATIONS RESEARCH

Contact Hours: 120

Objective: The course is intended to guide students to understand the various OR techniques applicable to health care system which helps to improve the effectiveness and efficiency of the services of hospital.

Contents:-

Unit-1

Introduction to OR – concepts - the statistical analysis - forecasting techniques.
Applications - need of OR in the field of health - areas of application - material management - patient scheduling - Patient waiting - equipment replacement - resource allocation.

Unit-2

The methodology of quantitative approach - determining the nature of the problem - classification of problem - formulation of mathematical model - solution (simplex method & Big M method)- implementation.

Unit-3

Decision theory - decision making under conditions of uncertainty - conditions of risk - the value of perfect information - decision trees - decision making under conditions of certainty.
Linear programming - graphical method - simplex method - duality application in administration.

Unit-4

Sequencing - sequencing of n jobs and 2 machines - n jobs and 3 machines - n jobs and m machines.
Network models - PERT - CPM - analyzing the PERT network - critical path method - CPM analysis - cost analysis.

Unit-5

Replacement theory - replacement of item and deteriorates replacement of item that fail completely - group replacement.
Simulation - formulation - running and performance appraisal simulation models

References:-

Isrel Brosh: Quantitative techniques for Managerial Decision Making., Prentice Hall Co.,
Dharani Venkatakrishnan S : Operations Research., Keerthi Publishing House., Coimbatore.
Kenneth S Brown Jack B. Revelle: Quantitative Methods for Managerial Decisions., Addisons.
Handy A Taha: Operations Research., Sulthan Chand & sons.
Robert J.Thierauf & Robert C Kiekanp: Decision making through Operations Research.