

# OPERATIONS RESEARCH

**Semester II**  
**Code : OR02C10**

**Credit -4**  
**Hrs – 90**

## Objectives

- To enable the students to understand various techniques used in operation management decisions.

## MODULE 1

Operations research-meaning-origin and development-nature-OR in India-OR as a tool in decision making-OR and management-features and methodology of OR-Phases of OR study-models in OR-methods of deriving the solution-limitations of OR.

(5 Hrs)

## MODULE 2

Linear Programming-meaning-concepts-notations-uses and applications-formulation-graphical solution-simplex method- introduction of slack, surplus and artificial variable-duality.

(30 Hrs)

## MODULE 3

Transportation problems- different initial allocation methods-move towards optimality-MODI method of solving transportation problems. Assignment problems-solutions-variations in assignment problems.

(20 Hrs)

## MODULE 4

decision theory-Quantitative approach to management decision making-decision under conditions of uncertainty-Maximin-Maximax- Hurwics, Laplace and Minimax regret criteria-Decision making under risk-EMV-EOL-EVPI criteria-decision tree analysis- Game theory- Queing theory.

(20 Hrs)

## MODULE 5

Network analysis-CPM and PERT-Network concepts-construction of network diagram-numbering the events (Fulkerson's Rule), requirements-Network calculations-CPM-Concept of float-PERT probability considerations in PERT-calculation of float/slack under PERT-PERT calculations-points of similarities and dissimilarities in PERT and CPM-limitation of PERT and CPM.

(15 Hrs)

## REFERENCE BOOKS

1. *Operation research, theory and applications*, J.K.Sharma, Macmillain India limited.
2. *Operations Research: Principles and Practice*, Ravindran.
3. *Research methodology and OR*, H.R.Ramanath, Himalaya Publishing House
4. *Operation Research*, VK.Kapoor, Sultan Chand Co;
5. *OR*, Sarmma & Ananad, Himalaya Publishing House
6. *Operation Research*, Kanthi Swarup, Sultan Chand Co;
7. *Operation Research*, SD. Sharmma, Kedarnath Co;
8. *Operation Research-problem and solutions*, J.K.Sharma, Macmillain India limited.
9. *Operations Research*, K.K. Chawla, Gupta & Sharma; Kalyani Publishers