Course Code: 5.2	Course Name:	Credits			
	Operations Research	L:2	T: 1	P:0	Total:3

Objective:

This course is designed with an objective to

- > Discuss definition, scope, objectives, phases, models & limitations of operations research
- Analyze managerial problems in industry so that they are able to use resources (capitals, materials, staffing, and machines) more effectively
- Explain graphical method, simplex method and duality.
- > Solve transportation problem.
- > Describe how to write case study report.

Learning outcome

On completion of the course students will be able to:

- > Discuss the importance and value of Operations Research and mathematical modeling involving practical problems in industry.
- ➤ Model mathematically real life managerial decision making problems.
- > Use computer tools to solve a mathematical model for a practical problem.
- Construct case study report.

PART-A Theory (TH:5.2)

Total Marks: 100

(In Semester Evaluation –40 & End Semester Evaluation –60)

Unit I Model Formulation

Marks: 12

Introduction, Structure and assumption of an Linear Programming problem(LP), General mathematical model of linear programming problem.

Unit II Graphical Solution Method

Marks: 12

Introduction, Definitions, graphical solution method of an LP problem, multiple optimal solution, unbounded solution, Infeasible solution.

Unit III Simplex Method

Marks: 12

Introduction, standard form of LP problem, simplex algorithm (maximization case), Simple Algorithm (Minimization case), multiple Optimal solution, Unbounded Solution

Unit IV Duality Marks: 12

Introduction, Formulation of dual linear problem, standard results on duality, advantage of duality.

Unit V Transportation Problem

Marks: 12

Introduction, Loops in transportation table and their properties, transportation method, Linear programming formulation of the transportation problem.

PART-B Practical (PR 5.2)

Credit					
L:0	T:0	P:2	Total:1		

Total marks:50

(In Semester Evaluation –20 & End Semester Evaluation –30)

- ➤ Computer application of Operations Research methods
- Case studies.

Text Books:

- 1. Sharma K. J., "Operation Research Theory and Application", 3rd Edition, MacMillan India Ltd.2014.
- 2. Havinal V. "Introduction to Operations Research", 1st Edition, New Age International Publishers.2012

Reference Books:

- 1. Bronson R., *Operation Research*; 2nd Edition, McGraw Hill.1997.
- 2. Sharma K.J., " *Operation Research: Problems and Solutions*", 3rd Edition, Macmillan Publishers ,2016.