

<b>Subject Code: 1SC2040204</b>	<b>Subject Title: OPERATIONS RESEARCH</b>
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**Course Objective:**

- Ability to understand and analyze managerial problems in industry so that they are able to use resources (capitals, materials, staffing, and machines) more effectively.
- Knowledge of formulating mathematical models for quantitative analysis in industry.
- Mathematical models for analysis of real problems in Operations Research.

Teaching scheme (hours) per week		Credit			Theory Marks		Practical Marks		Total
Lecture	Tutorial	Theory	Practical	Total	Uni. Assessment	Cont. Assessment	Uni. Assessment	Cont. Assessment	
4	1	5	-	5	60	40	--	--	100

Subject Contents			
Unit. No	Topic	Total Hours	Weight (%)
1	Linear Programming Problem: formulation, Graphical solution, Simplex method, Artificial variables techniques, Big– M method, Duality Principle.	18	25
2	Transportation problem: Formulation, Optimal solution, Unbalanced transportation problem, Degeneracy, Maximization case. Assignment problem: Formulation, Optimal solution, Variants of Assignment Problem.	18	25
3	Theory of games: Introduction, Minimax (maximin), Criterion and optimal, Strategy, Solution of game with saddle points, Rectangular games without saddle points, Dominance Principle, and games. $2 \times m$ and $n \times 2$ .	18	25
4	Production scheduling (Job sequences): Introduction, Johnson's algorithm for n jobs 2 machines, Johnson's algorithm for N jobs m machines, 2 jobs machines using graphical method.	18	25

**Course Outcome:**

On successful completion of the course, students should be able to

- Recognize the importance and value of Operations Research and mathematical modeling in solving practical problems in industry
- Formulate a managerial decision problem into a mathematical model.
- Understand Operations Research models and apply them to real-life problems.

**List of References:**

- “Operation Research”, N.H. Shah, Ravi Gor, Hardik Soni, PHI Publ.
- “Operation Research: an introduction”, Hamdy and Tahia, Prentice-Hall, 1997.
- “Operation Research: Theory & Applications”, J. K. Sharma, Third Eddition-2007.
- “Operation Research: Techniques for Management”, V. K. Kapoor, S. Chand.