III SEMESTER

22 BA301-OPERATIONS RESEARCH

Course Code	**22 BA 301**	Course Delivery Method	Classroom / Blended Mode
Credits	**4**	CIA Marks	30
No. of Lecture Hours / Week	05	Semester End Exam Marks	70
Total Number of Lecture Hours	75	Total Marks	100
Year of Introduction :2008	Year of Offering :2019	Year of Revision:	Percentage of Revision:
Course Focus	***Employability***	**E**ntrepreneurship	**S**kill Development.

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 of managerial problems in industry, Skills in the use of Operations Research approaches and computer tools in solving real problems in industry, Mathematical models for analysis of real problems in Operations Research.

COURSE OUTCOMES: By the end of the course students will be able to

CO-1 Knowformulating mathematical model for quantitative analysis of managerial problems in industry.
CO-2 Imparts skills in the use of network models in solving real problems in industry and business.
CO-3 Develop the ability to identify transportation and assignment models in solving real business problems.
CO-4 Understand the significance of game theory and decision theory models for facilitates the managerial decision-making.
CO-5 Understand the queuing and simulation concepts that yield a competitive advantage through operational excellence.

COURSE CONTENT

UNIT-I: Operations Research and Linear Programming Problem: Introduction, Uses, Scope, and Applications of Operation Research in Managerial Decision-making; O.R. Models, Formulation of Models, Using Models for Problem Solving, Techniques of Operations Research, Limitations of Operations Research, Linear Programming: Mathematical Formulations of LP Models for Product-mix Problems, Graphical Method, Simplex Method and its Applications**.** **(18 Hours)**

UNIT-II: Duality and Network Techniques: Duality in Linear Programming,Technical Issues in Simplex Method,Project Management,Network Models: PERT, and CPM and its Applications**.** **(15 Hours)**

UNIT-III: Transportation & Assignment Problem: Transportation-Introduction,Methods for Finding Initial Solution,Optimum Solution-MODI Method,Assignment Problem-Introduction- Hungarian Method. **(15 Hours)**

UNIT-IV: Game Theory & Decision Theory:,Introduction,Two Person Zero sum games,Pure and Mixed Strategies,Dominance Principles,Graphical method,Decision Theory and its Applications. **(14 Hours)**

UNIT-V: Queuing Theory &Simulation: Queuing model (M / M / I ONLY): Components, Basic Structure, and Assumptions,waiting line Decision Problem,Simulation: Types, Random variable, Monte-Carlo Technique. **(13 Hours)**

REFERENCES:

1. S.D.Sharma., Operation Research Theory, Methods & Applications, 17th Revised Edition,(2014) KedarNathRamnath, New Delhi.
2. Kantiswarup, P.K.Gupta and Manmohan, Operations Research, 15th Edition (2010) Sultan Chand & Sons New Delhi.
3. Kapoor, V.K., Operation Research Techniques for Management, 4th Edition, (2001), Sultan Chand & Sons, New Delhi.
4. Sharma, J. K., Operation Research,Theory and Applications, 5th Edition (2013) MacMillan.
5. R. Paneerselvam, Operation Research – 2nd Edition, (2009) PHI learning private ltd.,