UNIVERSITY OF MADRAS
B.COM. (GENERAL) DEGREE PROGRAMME
SYLLABUS WITH EFFECT FROM 2023-2024

<u>SECOND YEAR – SEMESTER – IV</u>
Elective IV- Operation Research
(Common to BCom-AF & MM)

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
246E4C	3				3	3	25	75	100

	Learning Objectives	
LO1	To introduce the students to operations research and linear programming.	
LO2	To impart knowledge about transportation and assignment problems.	
LO3	To get acquainted with game theory and simulation.	
LO4	To develop abilities to analyse and manage inventories using various methods.	
LO5	To acquire knowledge on network analysis.	
UNIT	Contents	No. of Hours
I	**Introduction to Operations research and Linear Programming Problem** Operations research – Origin and development - Role in decision making - Phases and approaches to OR - Linear programming problem – Applications and limitations - Formulation of LPP - Optimal Solution to LPP - Graphical method - Simplex Method	9
II	**Transportation and Assignment problem** Transportation Problem – methods - North West corner method - Least cost method - Vogel's approximation method - Moving towards optimality - Stepping stone & MODI methods - Assignment problem	9
III	**Game Theory and Simulation** Game Theory- different strategies followed by the players in a game - Optimal strategies of a game using maxi-min criterion - Dominance property - Graphical method - Simulation	9
IV	**Inventory Management** Introduction to inventory systems, inventory classification. Economic order quantity (EOQ) model, Single period probabilistic inventory models with discrete and continuous demand, determination of reorder point for deterministic and probabilistic Inventory System. Basic concepts of Just-in-Time (JIT) and Material Requirement Planning (MRP)	9
V	**Network Analysis** Network models- CPM and PERT Determination of Critical Path Method (CPM)- PERT cost- Crashing a project- Scheduling of a project- Application of PERT and CPM.	9
	Total	**45**

CO	Course Outcomes
CO1	Frame a linear programming problem for quantitative decisions in business planning.
CO2	Optimise economic factors by applying transportation and assignment problems.
CO3	Apply the concept of game theory and simulation for optimal decision making.
CO4	Analyse and manage inventories to meet the changes in market demand.
CO5	Construct networks including PERT, CPM for strategic management of business projects.
Textbooks	
1.	C.R.Kothari, "Quantitative Techniques", Vikas Publications, Noida
2.	V.K. Kappor, "Operations Research - Problems and Solutions", Sultan Chand & Sons Publisher, New Delhi
3.	Anand Sharma, Operation Research, Himalaya Publishing House, 2014, Mumbai
4.	M Sreenivasa Reddy, Operation Research, CENGAGE, New Delhi
5.	S. Gurusamy, Elements of Operation Research, Vijay Nicole Imprints Private Limited
Reference Books	
1.	S Kalavathy, Operations Research, Vikas Publications, Noida
2.	S.P. Gupta, "Statistical Methods", S.Chand& Sons Publisher, New Delhi. 2019
3.	Sarangi, SK Applied Operations Research and Quantitative Methods, Himalaya Publishing House, 2014, Mumbai
4.	ND Vohra, Quantitative Techniques in Management, McGraw Hill, 6th Edition, New Delhi 2021
5.	P.R.Vittal - Operation Research, Margham Publications, Chennai
Web Resources	
1.	www.orsi.in
2.	www.learnaboutor.co.uk
3.	www.theorsociety.com

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MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3
CO1	3	2	3	2	2	2	2	2	3	2	2
CO2	3	2	3	2	2	2	2	2	3	2	2
CO3	3	2	3	2	3	2	2	2	3	2	2
CO4	3	1	3	2	3	2	2	2	3	2	2
CO5	3	3	3	2	3	2	2	2	3	2	2
TOTAL	15	11	15	10	13	10	10	10	15	10	10
AVERAGE	3	2.2	3	2	2.6	2	2	2	3	2	2

3-Strong, 2-Medium , 1- Low