



Program	Master of Business Administration (MBA)	Semester - 3
Type of Course	Major	
Prerequisite		
Rationale	-	
Effective From A.Y.	2024-25	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				T	T	P	P	
4	-	-	4	50	30	-	-	150

SEE - Semester End Examination, T - Internal Theory, P - Internal Practical

Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
1	Operations Research <ul style="list-style-type: none"> • Definition, Features of OR approach • Modelling in OR: <ul style="list-style-type: none"> ◦ Mathematics – The Language of Modelling ◦ Classification of models ◦ Building a Mathematical Model, Verifying and Refining a Model, Variables and Parameters ◦ Advantages of model building • Methodology of Operations Research Linear Programming: <ul style="list-style-type: none"> • Structure of the Linear Programming model • Advantages, limitations and applications Guidelines on linear programming model formulation	15	25
2	Linear Programming: Graphical Method: (Theory and numerical) <ul style="list-style-type: none"> • Graphical solution methods: • Extreme point solution method, Maximization and Minimization Models, mixed constraints • Alternative optimal solutions, Unbounded Solution, infeasible solution, redundancy Linear Programming: Simplex Method: (Theory and numerical) <ul style="list-style-type: none"> • Additional Variables Used in Solving LPP • Maximization Case • Minimization LP Problems <ul style="list-style-type: none"> ◦ Two phase method, Big M Method, • Resolving complications <ul style="list-style-type: none"> ◦ Unrestricted variables, Degeneracy • Types of solutions <ul style="list-style-type: none"> ◦ Optimal, unbounded, infeasible Sensitivity Analysis (Only theory)	15	25
3	Transportation Model: (Theory and numerical)	15	25



Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
	<ul style="list-style-type: none"> Mathematical Formulation, Network Representation of Transportation Model, General Representation of Transportation Model. Finding initial solutions: <ul style="list-style-type: none"> North-West Corner Method, Least Cost Method, Vogel's Approximation Model Variations: <ul style="list-style-type: none"> Unbalanced supply and demand Degeneracy Alternative optimal solutions Prohibited routes Maximization Transportation Transshipment Waiting Model (Queuing Theory): <ul style="list-style-type: none"> Queuing Systems, Characteristics of Queuing System Structure of a queuing system, performance measures, probability distributions in queuing systems Classification of queuing models Symbols and Notations, Single Server Queuing Model 		
4	<p>Markov Chains: (Only theory)</p> <ul style="list-style-type: none"> Characteristics, applications State and transition probabilities Steady state equilibrium <p>Game Theory:</p> <ul style="list-style-type: none"> Introduction Two-Person Zero-Sum Game Pure Strategies: Game with Saddle Point Mixed Strategies: Games without Saddle Point, Dominance Property Solving Problem on the Computer with TORA Solving LP Model Games Graphically Using Computer <p>Simulation:</p> <ul style="list-style-type: none"> Definition, types, steps of simulation Advantages and Disadvantages of Simulation Monte Carlo Simulation Simulation of Demand Forecasting Problems <p>Simulation of Queuing Problems.</p>	15	25
Total		60	100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy

Level	Understanding	Application	Evaluate
Weightage	25	50	25

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.



Course Outcomes

At the end of this course, students will be able to:

CO1	An understanding and appreciation of linear optimization models as effective tools in addressing problems that are relevant to decision making in business, economics and other related areas.
CO2	<i>Formulate</i> Linear Programming models for service and manufacturing systems, and apply operations research techniques and algorithms to solve these LP problems.
CO3	<i>Formulate</i> Queuing models for service and manufacturing systems, and <i>apply</i> operations research techniques and algorithms to solve these transportation and Queuing problems to enhance customer service.
CO4	Identify project goals, constraints, deliverables, performance criteria, control needs and resource requirements in order to achieve project success

CO PO Mapping

CO	CO - 1	CO - 2	CO - 3	CO - 4
PO - 1	3	2	2	2
PO - 2	2	1	2	2
PO - 3	3	3	2	2
PO - 4	2	2	2	1
PO - 5	1	1	2	2

Reference Books

1.	Operations Research (TextBook) By S. R. Yadav, A. K. Malik Oxford, Pub. Year 2014
2.	Operations Research: Theory and Application By J. K. Sharma Trinity Press 2017