

Session Plan

**ST. JOSEPH'S COLLEGE OF COMMERCE, (AUTONOMOUS)
163, BRIGADE ROAD, BANGALORE 560025.**

PG DEPARTMENT

Objective:

The course is designed to provide the students the principles of advanced operations research techniques & their applications in decision-making. Students are also exposed to certain software packages.

Course Name: M.Com

Subject: Quantitative
Techniques & Operations
Research

Semester: II

Faculty: Poornima V

Module Number	Session No	Topic	Pre - Class Activity	Pedagogy (in class)	Out of Class Assignment
I		Introduction to Operations Research & Linear Programming			
	1	Origin of OR, Scope, Methodology, Models	-----	Lecture using PPT and Classroom Discussions	To make short notes on the features and techniques of OR
	2-3	Linear Programming Problem - Model Formulation	To learn the steps in formulating an LPP	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)

	4-6	Graphical Method of Solving Linear Programming Problems	To learn to plot single line graphs	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	7-10	Simplex Method – Maximization and Minimization Case	To watch videos on scope of simplex and methods	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	11	Duality in Linear Programming	To read on the concept of duality	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	12	Special Cases in Linear Programming	To read on the special cases of LPP	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	13-14	Solving problems using MS-Excel	---	Solving LPP using MS-Excel (Hands On) – Computer Lab	Practice more problems using Excel
II		Transportation Problems			
	15	Transportation Problem (Introduction), Mathematical Formulation of TP, Transshipment Model (concept only)	To read and write about transportation model in OR	Lecture using PPT and Classroom Discussions	To make short notes on different methods of solving Transportation Problem

	16-17	Methods for Initial Basic Feasible Solution (NWCM, LCM & VAM)	To conduct a comparative study on the methods of IBFS	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	18-20	Optimality Test using Modified Distribution Method, Special Cases - Unbalanced, Maximization, Multiple Optimal Solutions,	To read about MODI method	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	21-22	Prohibited and Preferred Routes, Degeneracy	To read about Special Cases in Transportation Problem	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	23	Solving problems using MS-Excel	----	Solving LPP using MS-Excel (Hands On) – Computer Lab	Practice more problems using Excel
III		Assignment Problems			
	24	Introduction, Mathematical Formulation, Solution using Hungarian Method	To read about Nature and Scope of Assignment Problems	Lecture and Classroom Discussions	To make short notes on balanced and unbalanced assignment problems
	25-27	Special Cases - Unbalanced, Maximization, Multiple Optimal Solutions, Prohibited and Preferred Assignments, Travelling Salesman Problem	To read and make short notes on the special cases	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)

	28	Solving problems using MS- Excel	----	Solving LPP using MS-Excel (Hands On) – Computer Lab	Practice more problems using Excel
IV		Simulation			
	29	Essence of Simulation, Applications of simulation	To read about the concept of Simulation	Lecture using PPT and Classroom Discussions	To make short notes on Monte-Carlo Technique
	30-31	Generation of random numbers, Problems using Monte - Carlo Technique	To learn the steps in generation of random numbers	Lecture and Problems/Case Study	Practice more problems (Worksheet/ Refer different text books)
	32	Solving problems using MS- Excel	----	Solving LPP using MS-Excel (Hands On) – Computer Lab	Practice more problems using Excel
V		Probability Distribution			
	33	Baye's Theorem	To read about the basic concepts of probability	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	34	Random variable, expectation and variance of random variable	To read about Discrete and Continuous Variables	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/
	35-38	Probability Distributions: Binomial, Poisson and Normal Distributions with Business Applications.	To read about theoretical distributions	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)

VI		Decision Theory			
	39	Process of Decision Making, Elements, Types of Decision Making Situations	To read about the concept of Decision-Making	Lecture and Classroom Discussions	To make short note on Decision-Making concept
	40-41	Decision Making under Certainty, Uncertainty and Risk	To read about different types of decision-making situations	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	42	Bayesian Approach	To read and make short notes on Bayesian Approach	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)
	43-45	Decision Tree Technique	To learn the rules and steps in drawing a decision tree	Lecture and Solving Problems in Classroom	Practice more problems (Worksheet/ Refer different text books)

BOOKS FOR REFERENCE:

1. Anderson Sweeney Williams: *An Introduction to Management Science Quantitative Approaches to Decision*, Thomson.
2. George K Chako: *Applied Operations Research/Systems Analysis in Hierarchical Decision Making*, North Holland Publishing Co.
3. Hamdy A Taha: *Operations Research – Prentice Hall India*.
4. Hiller / Lieberman: *Introduction to Operations Research*, Tata McGraw Hill
5. Sharma S. D.: *Operations Research*, Kedarnath Ramnath & Co.

Signature: Poornima V (Assistant Professor)