GANPAT UNIVERSITY

FACULTY OF MANAGEMENT STUDIES

Programme	Master of Business Administration	Branch/Spec.	---
Semester	I	Version	1.0.0.0
Effective from Academic Year	2026-27	Effective for the Batch admitted in	July 2026
Course Code	ICC502DSC	Course Name	Decision Science

Teaching Scheme						Examination Scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CCE	SEE	Total
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	50	50	100
Hours	3	0	0	0	3	Practical	--	--	--

Pre-requisites

Course Objective

To develop students' ability to apply statistical, probabilistic, and quantitative decision-making techniques to analyse business problems, optimize resources, forecast outcomes, and evaluate alternatives for effective managerial decision-making.

Course Outcomes

On successful completion of the course, the students will be able to:

CO1	Apply descriptive statistical techniques to analyse data and draw meaningful conclusions.
CO2	Utilize probability theories, probability distributions, and decision analysis tools such as EVPI and decision trees to solve business and management decision making problems.
CO3	Construct real-world decision-making problems as linear programming models, solve them using appropriate methods, and perform sensitivity analysis to interpret the impact of parameter changes on the optimal solution for informed decision-making.
CO4	Design optimized transportation and assignment models, forecasting methods to support effective managerial decision making.

Theory Syllabus

Unit	Content	Hrs.
1	Central Tendency and Descriptive statistics (Skewness and Kurtosis); Basic Statistical Methods: Measures of Central tendency: Mean, Median, Mode and Dispersion: Range, Inter Quartiles, Standard Deviation, Application of Chebyshev Theorem, Coefficient of Variation, Reliability of data sets.	10
2	Theory of Probability – Definition and Rules of Probability, Probability under statistical independence and dependence; Bayes' Theorem. Probability Distribution – Discrete distribution – (Binomial and Poisson), Continuous distribution –Normal). Decision Theory: Profit table/Loss table; Expected value of perfect information (EVPI), Minimum probability computation for additional unit; Decision tree analysis.	10
3	Linear problem programming (LPP): Mathematical formulations of LPP Models for product-mix problems; Graphical and simplex method of solving LP problems; Big M Method: simplex algorithm with artificial variables; Special cases: Unboundedness, infeasibility and multiple optimal solutions, Use of Solver for LPP solution and Sensitivity analysis: robustness of a solution for optimisation.	15
4	Transportation problem: Balanced and unbalanced; Deriving feasible solution (NWCR, LCM and VAM); Optimal solution (Modified Distribution method- MODI), Dealing with Routes prohibited. Assignment model: Algorithm and its applications: Hungarian Assignment Method (HAM). Forecasting: Trend analysis; Cyclical, Seasonal and Irregular variation. Using spreadsheet for Forecasting.	10

Practical Content

Practical, assignments and tutorials are based on above syllabus.

Text Books

TB1	Levin, R. I., Rubin, D. S., Rastogi, S., & Siddiqui, M. H. (2017). *Statistics for management* (7th ed.). Pearson.
TB2	Vohra, N. D. & Arora, H., "Quantitative Techniques in Management", 6th Edition, TMH Publishing

	Company Ltd., New Delhi.
Reference Books	
1	Black, K. (2013). *Business statistics: For contemporary decision making* (8th ed.). Wiley.
2	Sharma, J. K. (2014). *Business statistics* (2nd ed.). Pearson.
3	Vohra, N. D. (2017). *Business statistics*. McGraw Hill Education.
4	Keller, G., & Arora, H. (2017). *Business statistics*. Cengage Learning.
5	Srivastava, T. N., & Rego, S. (2014). *Statistics for management* (3rd ed.). McGraw Hill Education.
6	Anderson, D. R., Sweeney, D. J., & Williams, T. A. (2011). *Statistics for business and economics* (11th ed.). Cengage Learning.
7	Bajpai, N. (2018). *Business statistics* (2nd ed.). Pearson.
ICT/MOOCs Reference	
1	Decision Science in Management, By Dr. Sambath Kumar, Karthikeyan M P https://onlinecourses.swayam2.ac.in/e-learning/preview/imb26_mg233
2	Pre-MBA Statistics | Coursera https://www.coursera.org/learn/pre-mbastatistics
3	Statistics and Data Analysis with Excel, Part 1 (Coursera) | MOOC List https://www.mooc-list.com/course/statistics-and-data-analysis-excel-part-1-coursera

Note: Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme, Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision), L=Lecture, TU=Tutorial, P= Practical/Lab., TW= Term work, DT= Direct Teaching, Lab.= Laboratory work, CCE= Continuous and Comprehensive Evaluation, SEE= Semester End Examination.

Mapping of CO with Programme Outcomes (PO) and Programme Specific Outcomes (PSO)										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	3	1	0	2	0	2	2	2	3
CO2	3	3	1	0	3	0	3	2	1	3
CO3	3	3	0	0	2	0	2	3	3	3
CO4	3	3	0	0	2	0	2	3	3	2

3= High/substantial correlation; 2 = Medium/moderate correlation; 1= Low/slight correlation; 0= No correlation