

GANPAT UNIVERSITY											
FACULTY OF MANAGEMENT STUDIES											
Programme		MBA				Branch/Spec.		Tech MBA (MBA Technology Management)			
Semester		IV				Version		2.0.0.0			
Effective from Academic Year			2025-26			Effective for the Batch admitted in			January 2025		
Course Code		IVB03BSP		Course Name			Business Simulation and Prescriptive Analytics				
Teaching Scheme						Examination Scheme (Marks)					
(Per week)		Lecture (DT)		Practical (Lab.)		Total		CE		SEE	Total
		L	TU	P	TW						
Credit		2	0	0		2		Theory	100		100
Hours		2	0	0		30		Practical			
Pre-requisites											
Course Outcomes											
On successful completion of the course, the students will be able to:											
CO1	The students will be able to explain the evolution from descriptive to prescriptive analytics and the role of simulation in strategic decision-making.										
CO2	The students will be able to analyze business problems using modeling techniques like Monte Carlo simulation and scenario planning to quantify risk and uncertainty.										
CO3	The students will be able to evaluate business optimization problems to determine the best allocation of resources under given constraints.										
CO4	The students will be able to formulate a strategic recommendation based on simulation and optimization outputs, considering implementation challenges and communicating the results effectively.										
Theory Syllabus											
Unit	Content										Hrs.
1	Foundations of Prescriptive Analytics, The Analytics Maturity Curve: Descriptive to Prescriptive, Decision-Making under Certainty, Risk & Uncertainty, Introduction to Business Simulation & Modeling, Core Modeling Concepts: Inputs, Variables, Constraints, The Goal of Optimization: Finding the "Best" Solution.										6
2	Business Simulation for Risk Analysis, Monte Carlo Simulation (Conceptual): - Running Thousands of "What-Ifs" - Interpreting Probability Distributions & Confidence Intervals, Scenario Planning for Strategic Foresight: - Building Scenarios (Best/Base/Worst Case) - Linking to PESTLE & SWOT Analysis, Decision Trees for Sequential Choices, Applications: Simulating NPV in Capital Budgeting, Forecasting Sales, Project Timelines, Sensitivity Analysis: Identifying Key Business Drivers (Tornado Charts).										8
3	Optimization for Business Decisions, The Anatomy of an Optimization Problem, Linear Programming for Resource Allocation (Conceptual), Interpreting Optimization Outputs & Shadow Prices, Applications in Marketing: - Marketing Mix & Budget Allocation, Applications in Operations: - Supply Chain Network Design - Production & Staffing Planning, Portfolio Optimization (Conceptual): The Efficient Frontier.										8
4	Strategic Implementation and the Future, Communicating Model Results to Executive Stakeholders, The Digital Twin Concept in Modern Business, Integrating Simulation with Business Intelligence Dashboards, Implementation Challenges: Data, Complexity & Buy-In, The Role of Human Judgment alongside Analytics, Ethical Implications of Optimization & AI-Driven Decisions, The Future: AI-Driven Simulation & Autonomous Planning.										8
1											
Practical, assignments and tutorials are based on above syllabus.											
Text Books											
1	Davenport, Thomas H., and Harris, Jeanne G. Competing on Analytics: The New Science of Winning. Harvard Business Review Press, 2017.										
Reference Books											

1	Siegel, Eric. Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die. 2nd Edition, Wiley, 2016.
2	Winston, Wayne L. Microsoft Excel 2019: Data Analysis and Business Modeling. Microsoft Press, 2019.
3	Kahneman, Daniel. Thinking, Fast and Slow. Farrar, Straus and Giroux, 2011.
4	Hubbard, Douglas W. How to Measure Anything: Finding the Value of Intangibles in Business. 3rd Edition, Wiley, 2014.
5	Harvard Business Review. HBR's 10 Must Reads on Making Smart Decisions. Harvard Business Review Press, 2013.
6	Thaler, Richard H., and Sunstein, Cass R. Nudge: The Final Edition. Penguin Books, 2021.
7	Brealey, Richard A., Myers, Stewart C., and Allen, Franklin. Principles of Corporate Finance. 13th Edition, McGraw-Hill Education, 2019.
8	Hillier, Frederick S., and Lieberman, Gerald J. Introduction to Operations Research. 11th Edition, McGraw-Hill, 2021. (For conceptual understanding).
9	Knaflitz, Cole Nussbaumer. Storytelling with Data: A Data Visualization Guide for Business Professionals. Wiley, 2015.
10	Silver, Nate. The Signal and the Noise: Why So Many Predictions Fail-but Some Don't. Penguin Books, 2012.
11	Hammond, John S., et al. Smart Choices: A Practical Guide to Making Better Decisions. Harvard Business Review Press, 2015.
12	Agrawal, Ajay, et al. Prediction Machines: The Simple Economics of Artificial Intelligence. Harvard Business Review Press, 2018.
ICT/MOOCs Reference	
1	Coursera: Business Analytics Specialization — Wharton (University of Pennsylvania)
2	Udemy: Business Analytics Course: Excel, SQL, Power BI & Python

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	2	1	2	1	1	3	3	3	2	1
CO2	3	2	2	1	2	1	1	3	3	2	3	1
CO3	3	2	2	1	1	1	2	3	3	2	3	1
CO4	3	2	3	2	3	2	2	2	3	3	3	2