GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Business Administration

Level: PG

Course / Subject Code: MB03092151

Course / Subject Name: Advanced Data Analytics

w. e. f. Academic Year:	2025-2026
Semester:	3
Category of the Course:	Interdisciplinary Elective (Minor 1)

Prerequisite:	Any Graduate
Rationale:	This course equips MBA students with critical skills to interpret and leverage complex data for strategic decision-making, empowering future managers to drive data-informed decision making for competitive advantage.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Understand the significance of Data Analytics in various business domains for sound decision making.	Understand
02	Develop skills required for the use of Operational, HR, Marketing and Financial Analytics in providing modern business solutions.	Apply
03	Apply appropriate data preprocessing, visualization, and model-building techniques	Apply
04	Analyse and design multidisciplinary approaches of generating knowledge from data within and outside organizations.	Analyze
05	Evaluate the performance of various statistical and mathematical analytical models based on accuracy, business relevance, and ethical considerations.	Evaluate

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	0	3	70	30	50	0	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Introduction** • Data Analytics: Definition and Significance	12	25

	• Application of Analytics in Business Functions • Big Data Analytics – Overview **Operational Analytics:** • Capacity Planning & Resource Optimization • Inventory Optimization • Production Scheduling Optimization • Supply Chain & Logistics Optimization – Transportation Problem		
2.	**Basics of Financial Analytics** • Introduction • Need of Financial Analytics in Business • Overview of Predictive Sales Analytics, Cash Flow Analytics and Product Profitability Analytics • Application of Analytics in Financial Process	10	25
3.	**The Role of Analytics in HRM** • Introduction of HR Analytics • Different Phases of Development of Data-driven HR Decision: Descriptive and Predictive HR Decision Making • Analytics Vs. Metrics • Importance of HR Analytics • Steps to Implement HR Analytics **HR Decision Making and HR Analytics** • Changing Need for HR Decision-making • Framework of HR Analytics • Aligning Human Resources to Business Through HR Analytics • HRIS for HR Decision-making Ethical Issues in HR Analytics	13	25
4.	**Marketing Analytics** • An Introduction to Marketing Analytics • Benefits of Marketing Analytics • Marketing Analytics: Tools • Segmenting the Market • Analysing Customer Life Time Value • Understanding Digital Analytics Concepts (Web, social media, Email)	10	25
5.	**Practical:** • Group projects on the application of Analytics in selected areas of HR, Marketing and Finance domain. • Marketing – RFM Analytics, CLV Analytics, Customer Churn Prediction	--	--

	• HR – HR Cost Prediction, Predict Employee Attrition, Review Resumes by Text mining • Finance – Multi product Cost-Volume-Profit Analytics, Cash Flow Analytics		
	Total	**45**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20%	30%	20%	20%	10%	0%

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

No.	Author	Title	Publisher	Edition
1	Wayne L. Winston	Marketing Analytics -Data-Driven Techniques with Microsoft Excel	Wiley	Latest
2	Bharti Motwani	HR Analytics – Practical Approach Using Python	Wiley	Latest
3	Dipak Kumar Bhattacharyya	HR Analytics – Understanding Theories and Applications	SAGE	Latest
4	Stephen Powell, Robert Batt	Modeling for Insight - A Master Class for Business Analysts	Wiley	Latest
5	Mark J. Bennett, Dirk L. Hugen	Financial Analytics with R: Building a Laptop Laboratory for Data Science	Cambridge University Press	Latest

b) Open-source software and website:

1. Python Libraries: pandas, numpy, scikit-learn, statsmodels, matplotlib, seaborn
2. R Libraries: dplyr, ggplot2, forecast, shiny
3. KNIME – No-code/low-code data analytics platform - https://www.knime.com
4. Tableau Public – Free data visualization tool - https://public.tableau.com
5. Power BI (Free Desktop Version) https://powerbi.microsoft.com
6. Apache Superset – Open-source BI dashboard tool - https://superset.apache.org
7. Google Colab / Jupyter Notebook – Free environments for coding in Python - https://colab.research.google.com
8. https://www.turing.com/resources/data-science-case-studies
9. https://www2.deloitte.com/us/en/pages/deloitte-analytics/articles/business-analytics-case-studies.html

CO- PO Mapping:

Semester 3	Advanced Data analytics				
	POs				
Course Outcomes	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	3	3	1	2	2
CO2	3	3	2	2	3
CO3	2	3	1	2	1
CO4	2	3	2	3	2
CO5	2	3	1	3	1

*Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.*

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