Gyanmanjari Innovative University

Syllabus
Gyanmanjari Institute of Management Studies
Semester-1 (MBA)

Subject: Data Analytics for Business Decisions-MBA2XX11302

Type of course: Skill Enhancement Courses (SEC)

Prerequisite: Students should have basic computer literacy, elementary knowledge of mathematics and statistics, and familiarity with Microsoft Excel. They should also possess analytical thinking skills and an interest in solving business problems using data.

Rationale: This course equips students with the fundamental concepts, tools, and techniques of Business Analytics to support data-driven business decision-making. It develops analytical, problem-solving, and data visualization skills through hands-on activities using industry-relevant tools such as Excel and Power BI .

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks		Total Marks
CI	T	P	C	SEE	CCE	
0	0	4	2	100	50	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; SEE - Semester End Evaluation; LWA - Lab Work Assessment; V – Viva voce; CCE-Continuous and Comprehensive Evaluation; ALA- Active Learning Activities.

Course Content:

Sr. No	Course Content	Hrs.	% Weightage
	Introduction to Business analysis **Theory Topics** • Foundation to business analytics • Scope of business Analytics • Business analytics and its importance in modern business decision • careers in data analytics		

1	**Practical 1: Business Analytics in Daily Life** Students identify 10 real-life examples where analytics is used (e.g., Amazon, Netflix, Swiggy, Banking, UPI apps) and explain how data supports decision-making. **Practical 2: Case Study Analysis** Design a Google Form, collect responses from classmates, export the data to Excel, and calculate averages, percentages, and charts. **Practical 3: Business Analytics Across Industries** Prepare a presentation on how analytics is used in Banking, Retail, Manufacturing, Healthcare, Education, or Finance. **Practical 4: Career Exploration in Data Analytics** Research roles such as Data Analyst, Business Analyst, BI Developer, Data Scientist, and Marketing Analyst, including responsibilities, required skills, certifications, and career paths **Practical 5: Business Problem Identification and Analytics Solution** Select a business problem (e.g., declining sales or customer complaints) and propose how analytics can help solve it **Practical 6: Sales Data Analysis Using Excel** Analyze a sample sales dataset using sorting, filtering, Pivot Tables, Pivot Charts, and conditional formatting to identify trends and insights **Examination Style:**	**0T** **12 P**	**20**

Sr. No	Evaluation Methods	SEE	CCE
1	**ALA 1: Business Analytics Observation PPT** For one week, students will track their use of digital platforms (shopping, banking, food delivery, OTT, social media), noting 10 examples of Business Analytics in		

	action and how data improves customer experience or decisions. They'll submit a report with screenshots and present two observations in class		10
2	**Business Analytics Infographic Challenge** Students will design an A3 infographic or digital poster on the scope, importance, applications, and career paths in Business Analytics, using diagrams, icons, flowcharts, and industry examples.	10	
3	**Importance of Business Analytics in Modern Business Decision-Making** Case Study Analysis: Choose a company (Amazon, Netflix, Swiggy, Zomato, Flipkart, etc.) and describe five business decisions that are supported by data analytics. Summarize your findings in one page.	10	
	Total	20	10

Understanding of the data analysis
Theory Topics

- Types and tools for the data analysis
- Descriptive and predictive methods and tools
- Analytical models and decision making using models
- Business intelligence, Business Analytics and Data analytics

Practical 1: Types of Data Analysis Matching Game

Students work in teams to match real-world business scenarios with the correct type of analytics (Descriptive, Diagnostic, Predictive, or Prescriptive) and justify their choices. Each team

2	presents their answers, followed by a class discussion on the appropriate analytical approach. **Practical 2: Tool Identification Activity** Students research tools such as Excel, Power BI, Tableau, Python, R, and Google Looker Studio and present their features and applications. **Practical 3: Analytical Model Selection** Students analyze business problems from areas such as inventory, marketing, finance, and HR, and match each problem with the most appropriate analytical model. They justify their selections and discuss how the chosen model supports effective business decision-making. **Practical 4: Decision-Making Simulation** Students analyze a business scenario with multiple decision alternatives using the given data and select the most suitable solution. They justify their decision with logical reasoning and present their recommendations to the class. **Examination Style:**	**0T** **12 P**	**20**

Sr. No	Evaluation Methods	SEE	CCE
1	**ALA 2: Data Analytics Tools Comparison Portfolio** Students will research five data analytics tools and create a comparison portfolio covering each tool's purpose, features, pros/cons, industry use, and a real-world example. They'll conclude by recommending and justifying the best tool for a small business, then upload it to the GMIU web portal		10

	2	**Dashboard Observation** Students will analyze business dashboards across key industries to evaluate historical performance and identify critical metrics.they will. perform descriptive and predictive analyses to explain existing patterns and forecast future trends.	10		
	3	**Data Storytelling Presentation** Using a given or collected dataset, students will interpret charts (bar, line, pie, histogram, dashboards) to spot trends and key insights, then prepare a presentation highlighting KPIs and data-backed business recommendations, showcasing their ability to turn data into a clear, decision-driving story.	10		
		Total	20	10	
3	**Data, Data types and descriptive data** **Theory Topics** • Preparing data for the analysis • Concept of population and sample • Data types and data collection • The 4 Levels of Data Measurement • Data Auditing and Quality Assessment **Practical 1: The "Data Laundromat"** Students will clean a raw dataset by removing duplicate records, handling missing values, correcting formatting errors, and standardizing the data to improve its quality and consistency. They will document the changes made during the cleaning process and explain how data preparation enhances the accuracy and reliability of business analysis. **Practical 2: Population and Sample Identification** Analyze business scenarios to identify the population, sample, sampling unit, and sampling frame, building foundational skills for designing valid research and survey methodologies. Students			**0T** **12 P**	**20**

will also learn to apply these concepts to select appropriate sampling techniques for business decision-making

Practical 3: Sampling Techniques Demonstration

Demonstrate simple random, systematic, stratified, convenience, and cluster sampling using class data, enabling students to apply and compare different sampling methods hands-on. Students will also learn to evaluate the strengths and limitations of each technique for selecting appropriate methods in real business research scenarios.

Practical 4: Descriptive Statistics Using Excel

Compute mean, median, mode, range, variance, and standard deviation for a given dataset, enabling students to summarize and interpret data effectively. Students will also learn to apply these measures to compare and analyze business datasets for informed decision-making

Examination Style:

Sr. No	Evaluation Methods	SEE	CCE
1	**ALA 3: Personal Data Log** Each student records 10–15 personal data points from their own daily life e.g., time spent on phone each day this week, money spent daily, number of steps walked, or hours slept. On their worksheet, and make report on • Their population vs. sample • The sampling method used Upload that report on the GMIU Web portal.		10
2	**Data Visualization for Statistical Analysis** Create bar charts, histograms, pie charts, line graphs, and box plots from a dataset, and interpret the findings by identifying the patterns,	10	

		trends, central tendency, and variability each visualization reveals.			
	3	**Preparing a Dataset for Power BI** Students will clean a messy dataset in Excel using Power Query—removing duplicates, fixing inconsistencies, and handling missing values—then organize and analyze it using pivot tables and Excel functions	10		
		Total	20	10	
	4	**Foundations of Business Analytics using JAMOVI** **Theory Topics** • Getting Started with JAMOVI • Data Management in JAMOVI • Running and Reporting Analyses • Basic concept of data visualization and definition • Methodology of data visualization • How to visualize Univariate,bivariate and multivariate data **Practical 1: JAMOVI Interface and Data Import** Install JAMOVI, explore its interface, and import a given dataset (CSV/Excel). Export your results as a PDF or Word file. Use AI to troubleshoot errors and summarize the dataset, then verify it yourself. **Practical 2: Data Setup and Preparation in JAMOVI** Set correct variable types (Nominal, Ordinal, Continuous) and apply a filter to the given dataset. Create one computed variable using the formula editor. Use AI to help write the formula, then check and correct it before applying. **Practical 3: Market Research & Consumer Behavior Analysis Using JAMOVI** Students will input and structure a 20-customer retail dataset in JAMOVI to profile consumer demographics using univariate metrics (means, frequencies, and histograms). They will then		**0T** **12 P**	**20**

execute bivariate analyses (split descriptives and correlation) to uncover how gender and age impact store spending and satisfaction, delivering data-backed retail strategies by the end of the class.

Examination Style:

Sr. No	Evaluation Methods	SEE	CCE
1	**ALA 4: Data Visualization Poster** Each student individually designs a poster (chart paper or digital) covering the basic concept of data visualization, its methodology, and examples of univariate, bivariate, and multivariate charts with brief labels. Include at least one chart generated in JAMOVI from a sample dataset. Students may use AI to refine layout or labels, but the final design must be their own. Upload a photo/PDF of the completed poster on the GMIU web portal.		10
2	**Univariate and Bivariate Visualization Test** Students have to perform the univariate and bivariate data visualization activity using the dataset provided by the faculty in JAMOVI. Students have to create a Histogram, Box Plot, and Pie Chart for a single variable and a Scatter Plot for two variables such as Experience and Salary. Students must write a brief interpretation below each chart explaining the distribution, spread, proportions, outliers, and relationship between the variables	20	
	Total	20	10

Data Visualization

Theory Topics

- Basic concept of data visualization and definition
- Methodology of data visualization
- How to visualise Univariate,bivariate and multivariate data
- Data visualization tools and definitionData mapping in the charts
- Power BI Dashboard creation

Practical 1: Build Your First Power BI Dashboard

Each student individually designs a poster (chart paper or digital) covering the basic concept of data visualization, its methodology, and examples of univariate, bivariate, and multivariate charts with brief labels explaining each.

Practical 2: Good vs Bad Visualization

Each student is given a set of poorly designed charts (e.g., missing labels, misleading scales, wrong chart type, cluttered design) alongside well-designed versions for comparison. Students identify the mistakes in each poor chart and write suggested improvements.

Practical 3: HR Analytics Dashboard and Financial Dashboard

Each student is given a business dataset and creates a dashboard in Excel including key indicators such as Revenue, Expenses, Profit, Budget Variance, and Cash Flow, using appropriate charts and visual elements for each..

Examination Style:

Sr. No	Evaluation Methods	SEE	CCE
1	**ALA 5: Mini Business Intelligence Project** Each student imports a business dataset at home, cleans the data, creates maps, and builds an interactive Power BI dashboard, then writes business insights with recommendations based on		10

5		0T 12 P	20

	their findings. Students upload their completed Power BI file on the GMIU web portal.				
2	**Sales Data Interactive Executive Dashboard** Students are given a sales dataset and must build an executive-level dashboard in Power BI/Excel combining key KPIs, relevant charts, a map visualizing regional performance, and slicers for interactive filtering — designed for management reporting.	10			
3	**Visualization Quiz Relay** Students will evaluate and apply their knowledge by answering questions on data visualization tools, chart selection, Power BI features, data analytical tools, and dashboard creation, analysis, and interpretation to support business decision-making.	10			
	Total	20	10		

Suggested Specification table:

Distribution of Marks (**Revised Bloom's Taxonomy**)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage %	10%	20%	10%	30%	20%	10%

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

Course Outcome:

After learning the course, the students should be able to:	
CO1	Explain the fundamental concepts, scope, importance, applications, and career opportunities of Business Analytics and understand its role in modern business decision-making.
CO2	Differentiate between descriptive, diagnostic, predictive, and prescriptive analytics, and select appropriate analytical methods, tools, and models for solving real-world business problems.
CO3	Apply concepts of data types, population, sample, sampling techniques, data preparation, and descriptive statistics to clean, summarize, and analyze business data for effective decision-making.
CO4	Design univariate, bivariate, and multivariate data visualizations using tools such as JAMOVI and Excel to identify patterns, trends, relationships, and meaningful business insights.
CO 5	Create interactive Power BI dashboards and business intelligence reports using KPIs, charts, maps, and interactive filtering features to communicate data-driven insights and support managerial decision-making.

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. A minimum of 20–30% of the course content shall be suggested to deliver through Flipped Learning, where students study digital learning resources before the classroom session.

Classroom time shall be utilized for discussion, problem-solving, practical applications, and higher-order learning activities.

Students shall be encouraged to use AI-powered learning platforms, simulation software, virtual laboratories, digital libraries, research databases, online certification courses, NPTEL, SWAYAM, MOOCs, and other technology-enabled learning resources to strengthen conceptual understanding and practical competence.

Continuous assessment shall be conducted through Active Learning Assignments (ALAs), quizzes, skill demonstrations, presentations, practical exercises, projects, case studies, innovation activities, peer assessment, reflective learning, and industry-oriented tasks instead of relying primarily on conventional written assignments.

Reference Books:

[1] Camm, J. D., Cochran, J. J., Fry, M. J., & Ohlmann, J. W. – Business Analytics (4th Edition), Cengage Learning, 2020

[2] Evans, J. R. – Business Analytics: Methods, Models, and Decisions (3rd Edition), Pearson Education, 2020

[3] Ferrari, A., & Russo, M. – The Definitive Guide to DAX: Business Intelligence with Microsoft Power BI, Analysis Services, and Excel (2nd Edition), Microsoft Press, 2019

[4] Sharda, R., Delen, D., & Turban, E. – Business Intelligence, Analytics, and Data Science: A Managerial Perspective (4th Edition), Pearson Education, 2017

[5] Winston, W. L. – Microsoft Excel Data Analysis and Business Modeling (7th Edition), Microsoft Press, 2019

Suggested Assessment Guidelines:

SEE	Topic	Criteria	Marks	Description
1	**Business Analytics Infographic Challenge**	Content Accuracy & Concept Coverage	5	Demonstrates a comprehensive understanding of Business Analytics by accurately presenting its scope, importance, applications, career opportunities, and industry examples.
		Creativity, Visual Design & Presentation	5	Designs an attractive infographic using appropriate visuals, icons, flowcharts, and statistics, and confidently explains the content during the presentation.
	Importance of Business Analytics in Modern Business Decision-Making	Observation & Analytical Thinking	10	Identifies at least ten real-life applications of Business Analytics through systematic observation and clearly explains how data supports customer experience and business decision-making using appropriate examples.

2	**Dashboard Observation**	KPI Identification & Dashboard Analysis	5	Correctly identifies KPIs, trends, and patterns from the selected dashboard.
		Business Insights & Recommendations	5	Provides logical insights and practical recommendations based on dashboard observations.
	Data Storytelling Presentation	Data Interpretation	5	Correctly interprets charts, dashboards, and KPIs to identify meaningful trends and patterns.
		Business Story Development	5	Develops a logical and data-driven business story supported by visualizations..
3	**Data Visualization for Statistical Analysis**	Idea Creativity & Originality	5	Selects and prepares the dataset correctly for statistical visualization with appropriate variables and formatting.
		Chart Creation & Visualization	5	Correctly creates bar charts, histograms, pie charts, line graphs, and box plots using appropriate visualization techniques.
4	**Preparing a Dataset for Power BI**	Preparing a Dataset for Power BI	5	Cleans the dataset by removing duplicates, correcting inconsistencies, and handling missing values effectively..
		Data Organization	5	Organizes the cleaned dataset using Excel functions, Power Query, and pivot tables for analysis.
5	**Univariate and Bivariate Visualization Test**	Chart Development & Accuracy	10	Correctly develops histogram, box plot, pie chart, and scatter chart using the provided dataset.
		Selection of Appropriate Visualization	10	Chooses suitable visualization techniques and applies appropriate formatting and labeling.

6	**Sales Data Interactive Executive DashboardSales Data Interactive Executive Dashboard**	Dashboard Design & Development	5	Develops an interactive dashboard with KPIs. charts, maps, and slicers using Power BI or Excel.
		Dashboard Functionality	5	Implements interactive features, filters, and appropriate visualizations to enhance usability.
7	**Visualization Quiz Relay**	Knowledge of Visualization Concepts	5	Demonstrates understanding of visualization tools, chart types, Power BI features, and data analytical tools through accurate responses.
		Application of Concepts	5	Applies visualization concepts appropriately to business scenarios and dashboard-related questions.