



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Computer Applications

Level: Post Graduate

Course / Subject Code: MC03094091

Course / Subject Name: Business Analytics

w. e. f. Academic Year:	2025 – 26
Semester:	3
Category of the Course:	Elective Group-1

Prerequisite:	Basic knowledge of data handling and spreadsheet tools (e.g., MS Excel). A fundamental understanding of databases, data types, and data structures. Introductory-level statistics and logical reasoning are beneficial but not essential.
Rationale:	<ul style="list-style-type: none">• To build a strong foundation in business intelligence and data visualization concepts using industry-leading tools.• To gain practical, hands-on experience with Power BI and Tableau for real-world data analysis.• To develop skills in data modeling, dashboard creation, and interactive reporting for informed decision-making.• To enhance analytical thinking and the ability to communicate insights effectively through visual storytelling.• To prepare students for career opportunities in data analytics, business intelligence, and related technology-driven roles.

Course Outcome:

After Completion of the Course, the Student will be able to:

No	Course Outcomes	RBT Level
01	Explain the core concepts of business intelligence and the significance of data visualization in decision-making using Power BI and Tableau.	UN
02	Demonstrate the ability to connect to, clean, and model data from various sources using Power BI and Tableau.	UN
03	Create dynamic dashboards and visual reports that effectively communicate business insights.	CR
04	Analyze real-world datasets to identify patterns, trends, and actionable business insights.	AN
05	Evaluate and compare the visualization strategies and analytical capabilities of Power BI and Tableau for solving business problems.	EV

*Revised Bloom's Taxonomy (RBT)



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Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Practical		
				ESE (E)	PA / CA (M)	PA(I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Introduction to Business Intelligence and Power BI Understanding Business Intelligence (BI) concepts, Importance of data visualization in decision-making, Overview of Power BI, Installing and setting up Power BI, Navigating the Power BI interface.	9	20%
2.	Data Handling and Modeling in Power BI Importing and connecting to various data sources, Data cleaning and transformation using Power Query, Creating and managing data models, Implementing calculated columns and measures using DAX.	9	20%
3.	Advanced Analytics and Visualization in Power BI Designing interactive reports and dashboards, Utilizing slicers, filters, and drill-down features, Incorporating time intelligence functions, Publishing and sharing reports via Power BI Service.	9	20%
4.	Introduction to Tableau and Data Visualization Overview of Tableau and its interface, Connecting to various data sources, Creating basic visualizations (bar charts, line graphs, maps), Building interactive dashboards.	9	20%
5.	Advanced Features and Analytics in Tableau Implementing calculated fields and table calculations, Using parameters and level of detail (LOD) expressions, Applying forecasting and trend analysis, Sharing and publishing dashboards.	9	20%
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
10	20	30	20	10	10

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



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References/Suggested Learning Resources:

(a) Books:

[Unit 1 to 3]

1. Clark, Dan. *Beginning Microsoft Power BI: A Practical Guide to Self-Service Data Analytics*. 2nd ed., Apress, 2020.
2. Deckler, Greg. *Learn Power BI: A Comprehensive, Step-by-Step Guide for Beginners to Learn Real-World Business Intelligence*. 2nd ed., Packt Publishing, 2022.
3. Ferrari, Alberto, and Marco Russo. *Introducing Microsoft Power BI*. Microsoft Press, 2016. Download a free eBook from https://download.microsoft.com/download/0/8/1/0816F8D1-D1A5-4F60-9AF5-BC91E18D6D64/Microsoft_Press_ebook_Introducing_Power_BI_PDF_mobile.pdf

[Unit 4 to 5]

4. Milligan, Joshua N. *Learning Tableau 2022: Create Effective Data Visualizations, Build Interactive Visual Analytics, and Improve Your Data Storytelling Capabilities*. 5th ed., Packt Publishing, 2022.
5. Milligan, Joshua N. *Learning Tableau 2025: Leverage Tableau's Newest Features to Revolutionize Your Data Storytelling with AI-Enhanced Insights*. 6th ed., Packt Publishing, 2025.
6. Sleeper, Ryan. *Practical Tableau: 100 Tips, Tutorials, and Strategies from a Tableau Zen Master*. O'Reilly Media, 2018.

(b) Free Learning Resources:

Power BI

- Microsoft Power BI course for free: <https://learn.microsoft.com/en-us/training/courses/pl-300t00>
- Training modules and courses: <https://learn.microsoft.com/en-us/training/browse/?products=power-bi>
- Online learning resources: <https://learn.microsoft.com/en-gb/power-bi/>

Tableau

- E-Learning resources: <https://www.tableau.com/learn/training/elearning>
- Free training videos: <https://www.tableau.com/learn/training>
- On-demand and live webinars to stay up to date: <https://www.tableau.com/events/webinars>

Suggested Project List:

A data file link is provided for each practical, but students are free to use any relevant data sets to perform the tasks.



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Power BI

1. Import and Clean Sales Data

Import a CSV file into Power BI and perform data cleaning operations such as removing null values, renaming columns, and changing data types.

Dataset: [Sales & Returns Sample](#)

2. Create Relationships and Data Model

Establish relationships between multiple tables (e.g., Customers, Orders, Products) and create a data model suitable for analysis.

Dataset: [AdventureWorksDW Excel Sample](#)

3. Build Calculated Columns and Measures

Use DAX to create calculated columns (e.g., Profit = Sales - Cost) and measures (e.g., Total Sales, Average Discount).

Dataset: [Financial Sample Workbook](#)

4. Design Interactive Dashboards

Create an interactive dashboard with slicers, filters, and multiple visualizations to analyze sales performance.

Dataset: [Retail Analysis Sample](#)

5. Implement Time Intelligence Functions

Apply DAX time intelligence functions to calculate Year-to-Date (YTD), Month-to-Date (MTD), and previous year comparisons.

Dataset: [Sales & Returns Sample](#)

6. Create KPI Indicators and Cards

Develop Key Performance Indicators (KPIs) and card visuals to display critical metrics like revenue and customer count.

Dataset: [Financial Sample Workbook](#)

7. Visualize Data with Maps

Use map visuals to represent sales data geographically, highlighting regions with the highest and lowest sales.

Dataset: [Retail Analysis Sample](#)

8. Publish Reports to Power BI Service

Publish a Power BI report to the Power BI Service, configure workspace settings, and share the report with stakeholders.

Dataset: Any of the above samples.

Tableau

Use the superstore dataset from [Tableau Sample Data](#) for all the following demonstrations:

9. Connect to Data and Create Basic Visualizations

Connect Tableau to a dataset and create basic visualizations such as bar charts and line graphs.



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10. Build Interactive Dashboards with Filters and Actions

Use the same dataset to combine sheets into dashboards with filter actions and interactivity.

11. Create Calculated Fields and Use Parameters

Create calculated fields and parameters using the dataset to enable dynamic data filtering.

12. Develop Geo Maps and Color Code by Sales

Plot sales on geographic maps with color coding based on the dataset.

13. Create a Story to Present Business Insights

Use the dataset to build a story that guides viewers through business insights sequentially.

14. Publish Tableau Dashboard to Tableau Public or Server

Publish the dashboard created from this dataset to Tableau Public or Server with sharing configurations.

CO- PO Mapping:

Semester 3	Business Analytics							
	POs							
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	-	3	-	-	-	2
CO2	3	3	2	3	-	-	-	-
CO3	2	3	3	3	2	-	1	-
CO4	3	3	3	3	-	-	1	2
CO5	3	3	2	3	-	-	1	2

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

Note: The CO-PO mapping is indicative; the institute/faculty member can change as required.

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