Course (Category) Code	Course Name	Teaching Scheme (Hrs/week)					Credits Assigned			
		L	T	P	O	E	L	T	P	Total
(PE)	Advanced Data Visualization	2	0	2	4	8	2	0	1	3
1T14		Examination Scheme								
		Component		ISE		MSE		ESE		Total
		Theory		50		50		150		200
		Laboratory		50		--		50		100

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Pre-requisite Course Codes, if any.	–
Course Objective: To understand the principles of data visualization, develop proficiency in data visualization tools, explore data visualization techniques, practice effective data storytelling, work with big data and real world datasets.	
Course Outcomes (CO): ***At the End of the course students will be able to***	
DS4X4.1	Understand the principles of advanced data visualization.
DS4X4.2	Create basic and advanced charts and interactive data visualization using different data visualization tools.
DS4X4.3	Make use of various tools for Dashboard designing and storytelling.
DS4X4.4	Illustrate the big data visualization techniques.

CO-PO Correlation Matrix (3-Strong, 2-Moderate, 1-Weak Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
DS4X4.1												
DS4X4.2												
DS4X4.3												
DS4X4.4												

CO-PEO/PSO Correlation Matrix (3-Strong, 2-Moderate, 1-Weak Correlation)

	PEO1	PEO2	PEO3	PEO4	PSO1	PSO2	PSO3
DS4X4.1							
DS4X4.2							
DS4X4.3							
DS4X4.4							

BLOOM'S Levels Targeted (Pl. Tick appropriate)

Remember	Understand	Apply	Analyze	Evaluate	Create ✓

Theory Component

Module No.	Unit No.	Topics	Ref.	Hrs.
1	Title	**Introduction**		2
	1.1	Understanding the importance of data visualization	1,2	
	1.2	Principles of advanced data visualization	1,2	
	1.3	Types of advanced data visualization techniques	1,2	
2	Title	**Data Visualization Tools and Interactive Data Visualization**		7
	2.1	Introduction to various data visualization tools such as Tableau, Power BI, and D3.js	1,2, 3	
	2.2	Advantages and disadvantages of each tool	1,2, 3	
	2.3	Creating interactive data visualization using tools such as D3.js and Tableau	1,2. 3	
	2.4	Understanding the role of interactivity in data visualization	1,2, 3	
3	Title	**Advanced Charting Techniques**		5
	3.1	Introduction to advanced charting techniques such as heat maps, treemaps, and waterfall charts etc	1,2	
	3.2	Understanding when to use each technique	1,2	
4	Title	**Designing Effective Dashboards and Storytelling with Data**		7
	4.1	Principles of effective dashboard design	1,2, 3	
	4.2	Creating interactive dashboards using tools such as Tableau	1,2, 3	
	4.3	Best practices for dashboard design	1,2, 3	
	4.4	Understanding the role of storytelling in data visualization	4	
	4.5	Techniques for storytelling with data	4	
5	Title	**Data Visualization for Big Data and Visual Analytics**		7
	5.1	Introduction to data visualization for big data	5	
	5.2	Challenges of visualizing big data	5	
	5.3	Techniques for visualizing big data	5	
	5.4	Introduction to visual analytics	6	
	5.5	Understanding the role of visual analytics in data-driven decision-making	6	
6	Self Study	Data Visualization Ethics and Future Trends in Data Visualization		
			Total	28

Laboratory Component:

Sr. No	Title of the Experiment
1	Create basic charts using Tableau
2	Create advanced charts using Tableau
3	Design Interactive Dashboards and Storytelling using Tableau

4	Create basic charts using Power BI
5	Create advanced charts using Power BI
6	Design Interactive Dashboards and Storytelling using using Power BI
7	Create basic and advanced charts using D3.js
8	Design Interactive Dashboards and Storytelling using using D3.js
9	Design Big Data Dashboards using Tableau
10	Design Big Data Dashboards using Power BI

Text Books

Sr. No	Title	Edition	Authors	Publisher	Year
1	Data Visualization Through TABLEAU	First	George Peck	McGraw Hill	2020
2	Data Visualization with D3.js Cookbook	First	Nick Qi Zhu	Packt	2013
3	Mastering Microsoft Power BI	First	Brett Powell	Packt	2018
4	Effective Data Storytelling	First	Brent Dykes	Wiley	2019
5	Big Data Visualization	First	James Miller	Packt	2017
6	Visual Analytics with Tableau	First	Alexander Loth	Wiley	2019