

Branch Name:	Artificial Intelligence & Data Science
Program Code:	108
Course Name:	Data Visualization and Modelling
Course Code:	1ET1080503
Pre-requisite Course:	Basics of Python Programming, Python Data Analysis

Course Objectives:

1. The graphical depiction of data is known as data visualization, and it is used to effectively and dynamically communicate insights to clients, customers, and stakeholders in general.
2. It is a means to condense your findings and present them in a way that makes them easier to read and can be used to spot patterns or trends.
3. This course will teach you how to design engaging charts and visuals that will appeal to your audience while also increasing their usefulness.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
03	-	02	04	70	30	30	20	150

Subject Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	Introduction to Data Visualization Tools Python Libraries for Visualization, Power BI, Tableau	07	20
2	Data Visualization Tools in Python Introduction to Matplotlib, Basic Plotting with Matplotlib, Line Plots, Area Plots, Histograms, Bar Charts, Pie Charts, Box Plots Scatter Plots, Bubble Plots	08	25
3	Advanced Visualization Tools Waffle Charts, Word Clouds Introduction to Seaborn: Seaborn functionalities and usage, Spatial Visualizations and Analysis in Python with Folium, Case Study.	07	20
4	Tableau initialization Tableau installation, Data source settings in tableau, Data Interpreter, Interface of Tableau sheet, Various menu options	08	15

5	Tableau Visualization Visualization using Tableau, Various graphs in tableau, Real world data visualization tasks	10	20
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Text Books:

1. Core Python Programming - Second Edition, R. Nageswara Rao, Dreamtech Press.
2. Communicating Data with Tableau by Ben Jones, O'Reilly Media, Inc.

Reference Books:

1. Beautiful Visualization: Looking at Data through the Eyes of Experts (Theory in Practice) by Julie Steele, O'Reilly Media, Inc.
2. Practical Tableau by Ryan Sleeper, O'Reilly Media, Inc.
3. Data Visualization with Python and JavaScript by Kyran Dale, O'Reilly Media, Inc

LAB/Practical

1. Introduction to Matplotlib and Line Plots
2. Use Waffle Charts, Word Clouds, and Regression Plots
3. Prepare various charts using datasets
4. Prepare Various graphs in tableau

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Manipulate large datasets and handle missing or inconsistent values in datasets.	3 Applying 4 Analyzing
CLO2	Perform statistical analysis using packages such as Numpy and Scipy.	5 Evaluating
CLO3	Analyze and visualize datasets using packages such as seaborn and matplotlib.	4 Analyzing 2 Understanding
CLO4	Develop interactive visualization using packages such as Plotly and Shiny.	3 Applying
CLO5	Recognize and reduce data and spatial biases	2 Understanding

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	L	L	M								M	M		
CLO2	M	M	M	L	M								M	M		

CLO3	M	M	M	M	H								M	M		
CLO4	M	L	M	L	M								M	M		
CLO5	M	M	M	H	M								M	M		

H:High, M:Medium, L:Low