

Data Visualization Using Python-Sem 4

UNIT – I: Introduction to Data Visualization

- *What is data visualization? Explain its importance in data science.
- *Compare data visualization vs data analysis.
- *List the types of data visualizations (bar chart, histogram, pie chart, etc.) with examples.
- *Explain matplotlib and its key features.
- *Write a Python program to create a line chart using matplotlib.

UNIT – II: Using Matplotlib

- *What is matplotlib.pyplot? Explain its functions with syntax.
- *Write a Python program to draw a bar chart and a pie chart.
- *Explain how to customize charts (title, labels, color, legends, grid).
- *How do you plot multiple lines on the same graph?
- *What is the use of subplot() in matplotlib?

UNIT – III: Using Seaborn

- *What is seaborn? How is it different from matplotlib?
- *Explain any five seaborn plots with examples.
- *Write a program to create a heatmap using seaborn.
- *How do you load built-in datasets in seaborn?
- *Explain categorical vs numerical plots in seaborn.

UNIT – IV: Data Visualization with Pandas & Plotly

- *How can we visualize data using Pandas .plot() function?
- *Write a program to create a histogram from a DataFrame.
- *What is Plotly? How is it useful for interactive charts?
- *List the features of plotly.express and show how to create a scatter plot.
- *Write a Python script using Plotly to create an interactive line chart.

UNIT – V: Case Studies / Real-Time Visualizations

- *Create a visualization project using real-world data (e.g., student scores, COVID-19, rainfall data).

- *Explain the process of data cleaning before visualization.
- *What are best practices for effective data visualization?
- *How can visualization be used in decision-making?
- *Write a complete mini-project using matplotlib/seaborn with explanation.