DATA VISUALIZATION TOOLS

Credits: 3   **Semester: V**

Subject Code: DS21501   **No. of Lecture Hours: 45**

Objectives:
• To familiarize the students with fundamental concepts of Data Visualization.
• Students will learn and understand the basic tools used for visualizing data.

Outcome: Students will be able to
CO1: Understand the way of representing visual data and its applications.
CO2: Demonstrate data visualization using combination of various charts.
CO3: Apply visualizing techniques using matplotlib package.
CO4: Design effective graphical analysis in R
CO5: Construct data visualizations with Tableau to create customized dashboards and reports

UNIT-I
Data Visualization-1:
9 Hrs

1. Ways of Representing Visual Data
1

2. Techniques Used for Visual Data Representation
1

3. Types of Data Visualization
1

4. Applications of Data Visualization, Visualizing Big Data
2

5. Tools Used in Data Visualization
2

6. Tableau Products
2

UNIT-II
9 Hrs Data Visualization Using Excel:

1. Creating Combination of Charts, Creating a Combo Chart with Secondary Axis
1

2. Discriminating Series and Category Axis
1

3. Chart Elements and Chart Types, Data Labels, Quick Layout, Using Pictures in Column Charts

4. Band Charts, Thermometer Chart
2

 5. Gantt Charts, Waterfall Chart
2   6. Sparklines, Pivot Charts, Pivot Charts with Pivot Tables, Pivot Charts without   2

   Pivot Tables

UNIT-III
9Hrs

 Plotting and Visualization:
 1. A Brief Matplotlib API Primer
 1

  2. Plotting with Pandas and Seaborn
1

3. Python Visualization Tools
1

Basic Visualization using R:
4. Pie Chart, Bar Chart, Histogram, Line Chart, Kernal Density Plot
1

5. QQ Plot, Box & Whisker Plot, Violin Plot, Dot Chart, Bubble plot
1

Advanced Visualization Using R:
6. Scatter Plot, Corrgrams, Heat Maps, Tree Maps
2

7. Using ggplot2 for advanced Graphics

UNIT-IV
9Hrs
Creating Your First Visualizations and Dashboards:
1. Connecting to Data, Foundations for Building Visualizations
1

2. Visualizing Data, Creating Bar Charts, Line Charts, Geographic Visualizations
1

3. Using Show Me, Bringing Everything Together
1

Working with Data in Tableau:
4. The Tableau Paradigm, Connecting to Data
2

5. Managing Data Source Metadata, Working with Extracts instead of Live
Connection   2

 6. Tableau File Types, Joins and Blends, Filtering Data
2

UNIT-V
9 Hrs

 Moving from Foundational to More Advanced Visualizations:
1. Comparing Values Across Different Dimensions, Visualizing Dates and Times
1

2. Relating Parts of the Data to the Whole, Visualizing Distributions
1

3. Data Analytics in Tableau Public, Visualizing Multiple Axes to Compare Different
Measures
1 **Using Row-Level, Aggregate, and Level of Detail Calculations:**
4. Creating and Editing Calculations. Overview of the three Main Types of
Calculations, Level of Detail Calculations
                1

 5. Parameters, Practical Examples, Ad hoc Calculations
1

Table Calculations:
2   6. Overview of Table Calculations, Quick Table Calculations,
Relative versus Fixed, Scope and Direction
7. Addressing and Partitioning, Custom Table Calculations, Practical Examples
        2

Data Densification