Suggested Teaching Guidelines for

Data Visualization - Analysis and Reporting
PG-DBDA March 2023

Duration: **26 Classroom hours + 24 Lab hours**

Objective: To introduce students in Data Analytics, Visualization and Reporting

Prerequisites: Knowledge of Database Fundamentals and Big Data Technologies.

Evaluation method: Theory exam – 40% weightage
Lab exam – 40% weightage
Internal exam – 20% weightage

List of Books / Other training material
Reference Book:

1. Mastering Microsoft Power BI: Expert Techniques for Effective Data Analytics and Business Intelligence Book by Brett Powell
2. Designing Data Visualizations, by Steele,O'Reilly
3. Tableau your data, by Daniel G/ Wiley
4. Graphs Cookbook, Hrishi V. Mittal, Packt Publishing
5. Python Data Visualization Cookbook,Igor Milovanović, Packt Publishing
6. Learning Python Data Visualization, Chad Adams, Packt Publishing
7. Data Visualization with D3.js Cookbook,Nick Qui Zhu,Packt Publishing
8. Getting Started with D3,Mike Dewar,O'Reilly
9. Data Visualization with JavaScript
10. Data Visualization for Dummies
11. High Impact Data Visualization with Power View, Power Map, and Power BI
12. The Visual Organization: Data Visualization, Big Data, and the Quest for Better Decisions
13. Mastering Tableau 2021:- by Marleen Meier

Note:

- **Each session having 2 Hours**
- **Tool to be use: Tableau**

Session 1 & 2:

- Business Intelligence basic,
- Information gathering,
- Decision making,
- Managing BI,
- BI User Segmentation,
- Gathering BI Requirements,
- Content and Knowledge Management,
- Strategic Approach to BI
- Significance of visual analytics Information Visualization
- Data Representation
- Data collection and binding
  - Structured Data
  - Unstructured data

Session 3,4 & 5:
MS EXCEL

- Functions

- Formula
- Charts
- Pivots and Lookups
- Data Analysis Tool pack
    1. Descriptive Summaries
    2. Correlation
    3. Regression

Session 6
Data analytics Life Cycle:

- Discovery,
- Data preparation
- Model planning
- Model building implementation
- Quality assurance
- Documentation
- Management approval
- Installation
- Acceptance and operation

Session 7 & 8

- Introduction to Tableau
- Intelligent data analysis
- Nature of Data
- Analytics Processes and tools
- Analysis vs. Reporting
- Modern Data Analytic Tools
- Data sources in Tableau

Session 9,10, 11

- Visualization Algorithms
- Visual Encodings
    - color, size, shape, lines, axes, scaling, annotation
- Taxonomy of data visualization (Some Types of charts, but not limited to)
    - Comparison charts – types of Bar chart, Box plots, Histograms, Gantt charts, Bullet graphs, side-by-side bar chart etc.
    - Tables – Text Tables, Highlight tables
    - Hierarchies and relationships – Pie chart, stacked bar, Tree map etc.
    - Changes over time – Line chart, dual lines, Area charts etc.
    - Connections and relationships – scatter plots, Symbol maps, map, heat maps, Packed bubble chart etc.

Session 12 &13:

- Choosing appropriate visuals
- Applying calculations using functions, statistics
    - Numeric Calculations
    - String Calculations
    - Date calculations
    - LOD (Level of Detail) Expressions

- Data sorting, filters
- Interactive visualization
  - Event listeners/callbacks
  - Data updation
  - Visual updation
- Dashboard Design

Assignment-Lab:

- Load coffee chain dataset in Tableau and create required visuals. Also create the report for the same dataset using VBA tools in Excel.