Suggested Teaching Guidelines for

Data Visualization - Analysis and Reporting
PG-DBDA Aug 19

Duration: **24 class room hours + 26 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

Text Book:

1. Learning Tableau, Milligan Joshua N/ Packt

Reference Book:

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

Note: Each session having 2 Hours
Tool to be use: Tableau

Session 1 & 2:
Lecture

- BI basic,
- Information gathering,
- Decision making,
- Managing BI,
- BI User Segmentation,
- Gathering BI Requirements,
- Content and Knowledge Management,
- Strategic Approach to BI

Session 3:
Lecture

- Significance of visual analytics
- Information Visualization
- Data Representation
- Data collection and binding
  - Structured Data
  - Unstructured data

Session 4:
Lecture
Data analytics Life Cycle:

- Discovery,
- Data preparation
- Model planning

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Session 5:
Lecture
Data analytics Life Cycle:

- Model building implementation
  - Quality assurance
  - Documentation
  - Management approval
  - Installation
  - Acceptance and operation

Session 6
Lecture

- Intelligent data analysis,
- Nature of Data,
- Analytic Processes and Tools,
- Analysis vs. Reporting
- Modern Data Analytic Tools

Session 7 & 8:
Lecture

- Visual Encodings
  - color, size, shape, lines, axes, scaling, annotation
- Taxonomy of data visualization(Some Types of charts, but not limited to)
  - Comparison charts – Bar chart, Box plots, Histograms, Gannt charts, Glyph chart, Sanky diagam, Word Cloud etc.
  - Hierarchies and relationships – Pie chart, stacked bar, Tree map etc.
  - Changes over time – Line chart, sparklines, candlestick/ohlc etc.
  - Connections and relationships – scatter lots, bubble plots, radial network, heat maps, etc.

Session 9:
Lecture

- Geospatial Data, Geomapping
  - Choropleth
  - Cartogram
  - GeoJSON

Session 10:
Lecture

- Choosing appropriate visuals
- Applying calculations, statistics
- Data sorting, filters

Session 11:
Lecture

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

Session 12:
Lecture

- Cognitive issues