21DS4T1

P.B.SIDDHARTHA COLLEGE OF ARTS & SCIENCE (AUTONOMOUS), VIJAYAWADA-520010

(An Autonomous College in the Jurisdiction of Krishna University, A.P., India.)

DATA VISUALIZATION

SYLLABUS W.E.F 2021-2022

Course Category: Programme Core **Course Type:** Theory **Credits:** 4 **Semester:** IV

Prerequisites: Python Programming **Lecture-Tutorial-Practice:** 4-0-0

Continuous Evaluation: 30 **Semester end Evaluation:** 70 **Total Marks:** 100

Course Objectives:

1. To understand *Basics of Tableau*, *Visual Design and Connecting various Data Sources*.
2. To know *Uni-variate Charts*, *Bi-variate Charts*, *Multi-variate Charts, Interacting with the Viewer.*
3. To create *Tableau Maps* and *Creating Dashboards and Stories*.
4. To implement *Data Operations* of *Power BI.*
5. To implement *Power Pivot Model* and *Power BI Environment.*

Course Outcomes:

On successful completion of this course, the students able to:

CO1: Understand *Basics of Tableau*, *Visual Design and Connecting various Data Sources*.

CO2: Know *Uni-variate Charts*, *Bi-variate Charts*, *Multi-variate Charts*, *Interacting with the Viewer.*

CO3: Create *Tableau Maps* and *Creating Dashboards and Stories*.

CO4: To implement *Data Operations* of *Power BI.*

CO5: To implement *Power Pivot Model* and *Power BI Environment.*

UNIT I (12 Hours)

Introduction to Tableau: What is Tableau? - Opening Existing Workbooks - Creating New Workbooks.

Basic Visualization Design: Using Show Me - Choosing Mark Types - Color - Size - Shape and Label Options- Choosing Color Options - Setting Mark Size - Choosing Shapes - Text Tables and Mark Labels - Formatting Options - Evaluating Multiple Measures - Shared Axis Charts - Measure Names and Measure Values - Dual Axis Charts.

Connecting to Data: Connecting to Various Data Sources - The Data Source Page - Customizing Your View of the Data: Changing Data Type - Modifying Dimension / Measure Assignment - Hiding - Renaming and Combining Fields - Splitting Fields - Changing the Default Field Appearance - Organizing Dimensions in Hierarchies Using Table or Folder View - Saving and Sharing Metadata Extracting Data - Data Blending - Moving from Test to Production Database.

UNIT II (12 Hours)

Top 10 Chart Types (Uni-variate/Bi-Variate & Multi-variate Charts): Bar Chart - Line/Area Chart - Pie Chart - Text Table / Crosstab - Scatter Plot - Bubble Chart - Bullet Graph - Box Plot - Tree Map - Word Cloud.

Interacting with the Viewer: Filtering Data - Include or Exclude from the Worksheet - Basic Filtering - Quick Filters - Parameters - Creating a Parameter - Displaying a Parameter - Using a Parameter in a Worksheet - Worksheet Actions - Filter Actions - Highlight Actions - URL Actions.

UNIT III(12 Hours)

Tableau Maps: Geocoded Fields - Geographic Hierarchies and Ambiguity - Custom Geocoding - Background Maps and Layers - Navigating Maps and Selecting Marks - Map Options - Web Map Services - Mapping and Mark Types - Custom Background Images - Generating Your Own Coordinate System - Adding a Custom Background Image.

Creating Dashboards and Stories: Creating a Simple Dashboard - Setting Dashboard - Size - Adding Sheets - Associated Worksheet Elements - Supplementary Dashboard Features - Layout Container - Blank Text - Image - Webpage - Setting Dashboard and Element - Sizes - Dashboard Actions - Highlight Action - Filter Action - URL Action.

UNIT IV (12 Hours)

Introduction Power Pivot:

Introduction of Pivot: Use Power Pivot - xVelocity in Memory Analytics Engine - Exploring the Data Model Management Interface - Analyzing Data Using a Pivot Table.

Data Operations:

Working with Data: Import Data from Relational Databases - Import Data from Text Files - Import Data from a Data Feed - Import data from an OLAP cube.

Power BI Data Munging (Query): Discover and import data from various Sources - Getting, Cleaning and Shaping Data - Creating Table Relationships, Data, Merge, Shape, and Filter Data - Group and Aggregate Data - Insert Calculated Columns.

UNIT V(12 Hours)

Power Pivot Model: Creating Data Model - Explain what a Data Model is, Create Relationships between Tables in the Model, Create and use a Star Schema - Understand when and how to de-normalize the Data, Create and use Linked Tables.

Power BI:

Power BI Environment: Adding Calculations and Measures - Importing Graphs - User Graphs, Dash boards- Incorporating Time Based Analysis.

Prescribed Text Books			
	Author	Title	Publisher
1	George Peck	Tableau 9 - The Official Guide	McGraw Hill, 2016
2	Dan Clark	Beginning Power BI: A Practical Guide to Self Service Data Analytics with Excel 2016 and Power BI Desktop	O'Reilley, Second Edition

Reference Text Books			
	Author	Title	Publisher
1	Ashutosh Nandeshwar	Tableau Data Visualization Cookbook	Packt Publishing Ltd, 2013
2	Rob Collie & Avi Singh	Power Pivot and Power BI: The Excel User's Guide to DAX Power Query, Power BI & Power Pivot in Excel 2010-2016	Holy Macro! Books,2016
3	Daniel G. Murray	Tableau Your Data! Fast and Easy Visual Analysis with Tableau Software Second Edition	John Wiley & Sons

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M.Sc.,(DATA SCIENCE) DEGREE EXAMINATIONS

FOURTH SEMESTER

DATA VISUALIZATION

SYLLABUS W.E.F 2021-2022

Time: 3 Hours **Max. Marks: 70**

Answer ALL questions **(10×2 = 20 Marks)**

1. a) What is *Tableau*? (CO1,L1)
   b) How do you change *Data Type* in Tableau. (CO1,L1)
   c) What is *Tree Map*? (CO2,L1)
   d) What is *Quick Filter*? (CO2,L1)
   e) Name any two *Web Map Services*. (CO3,L1)
   f) Name any two features of *Supplementary Dashboard*. (CO3,L1)
   g) What is *Pivot Table*? (CO4,L1)
   h) What is *Data Munging*? (CO4,L1)
   i) What is *Star Schema*? (CO5,L1)
   j) What are the advantages of *Time Based Analysis*? (CO5,L1)

Answer Five Questions Choosing One Question from Each Unit.

All Questions Carry Equal Marks. **(5×10 = 50 Marks)**

UNIT I

2 a. Explain *Shape and Label Options* and *Formatting Options* in *Tableau*. (CO1,L2) 10 Marks

(or)

b. Illustrate how data sources connected to *Tableau*. (CO1,L2) 10 Marks

UNIT II

3 a. Build Uni-variate charts. (CO2,L3) 10 Marks

(or)

c. Experiment with *Basic Filters* and *Quick Filters*. (CO2,L3) 10 Marks

UNIT III

4 a. Compare any two types of *Tableau Maps*. (CO3,L4) 10 Marks

(or)

b. Examine the procedure to create Simple Dashboard. (CO3,L4) 10 Marks

UNIT IV

5 a. Explain how to Analyze Data using a Pivot Table. (CO4,L5) 10 Marks

(or)

c. Explain how to import data from various sources. (CO4,L5) 10 Marks

UNIT V

6 a. Create Relationships between Tables in the Model (CO5, L6) 10 Marks

(or)

b. Discuss how to import Graphs in Power BI. (CO5, L6) 10 Marks