# INT233:DATA VISUALIZATION

L:2  T:0  P:2    Credits:3

**Course Outcomes:**    Through this course students should be able to

CO1 :: identify and recall fundamental concepts and terms in data visualization and Tableau.

CO2 :: demonstrate understanding of data visualization principles and Tableau functionalities.

CO3 :: apply Tableau techniques to create and customize visualizations.

CO4 :: analyze data using Tableau to identify patterns, trends, and relationships.

CO5 :: evaluate the effectiveness of different data visualizations in conveying information.

CO6 :: design and develop advanced Tableau dashboards and data stories to address complex business problems.

**Unit I**

**DATA VISUALIZATION FUNDAMENTALS** : Basics of Data visualization, Data types, Exploratory versus explanatory visualizations, Design principles for charts and graphs, Value of Visualization, Data and Image Models, Common tools for creating data visualizations, Excel vs SPSS vs R vs Tableau

**Data Processing using tableau Prep** : Connecting to data, Creating Data Flow, Blend Data Sources, Cross Database Join, Project task, Tableau Prep for Business, Introduction to tableau Prep, Installation of tableau Prep, Basics of tableau prep

**Unit II**

**INTRODUCTION TO TABLEAU** : Introduction to tool, Installing Tableau, Tableau features, Connecting data with tableau, Joining data sources, Live data connections vs data extracts, Basic functions of tableau, Operations of tableau, Usage of Menus and Toolbar, Usage of Data Pane, Analytics Pane, Sheet Tabs, Shelves and Cards, Marks Card, Legends, Layout for dashboard and stories, Difference between Green and Blue pills

**Unit III**

**MANAGING, ORGANIZING AND ENHANCING DATA IN TABLEAU** : Splitting data, Pivoting & Transforming data, Blue & green pills Filters, Blue & green pills affect on dates, Cleaning data by Bulk Re-aliasing, Setting data defaults to save time later on, Create hierarchies to drill down into data, Creating groups for data, Creating and Using Sets, Create data filters, Create calculated fields, Combine data sources using data blending, Creating & using Parameters, Bringing in More data with Joins

**Unit IV**

**CHART TYPES AND THEIR USAGE IN TABLEAU** : Defining data and their different visualization ways, Building various charts, Visualizing data using Bar Chart, Lines Charts, Scatterplots, Heat maps, Histograms, Maps, Dual Axis Charts ,Pie Charts, Visualization data with advanced analytics Polygon Maps, Bump Charts, Control charts, Funnel charts, Pareto charts, Waterfall charts, Usage and filtration of data with charts, Visualizing categorical data, Visualizing time series data, Visualizing multiple variables, Visualizing geospatial data, Mapbox integrations, Web Mapping Services, Background Images

**Unit V**

**MATHEMATICAL AND VISUAL ANALYTICS IN TABLEAU** : Math and data, Aggregate calculations, Date calculations, Logic calculations, Number calculations, String calculations, Type calculations, Conceptual Topics with LOD Expressions, Nested LOD Expressions Showing change instead of raw numbers, Summary statistics in visualizations, Annotations and pre-attentive attributes, Use visual analytics to find answers in your data, Adding annotations to visualization, Add reference lines and trend lines, Visualizing forecasting data, Clustering, Drag and drop analytics, Analysis with cube and MDX

**Unit VI**

**INTERACTIVE DASHBOARDS AND STORY POINTS IN TABLEAU** : Creating a dashboard, Designing dashboard, Add motions, Adding interactivity with actions, Dashboard layout and formatting, Add extra detail to visualization using Marks Shelf, Add Size, Shape, Labels, Details, Tooltips in visualization, Sharing and collaborating dashboards, Story Points and how to create them, Designing effective slide presentations to showcase data story, Publish online business dashboards with Tableau, Exporting Pdfs, Sharing Dashboard Securely

**List of Practicals / Experiments:**

**List of Practicals**

- Create a visualization to demonstrate the concepts of parameters in Tableau.

- Create a visualization to demonstrate the concepts of filters in Tableau.

- Create a visualization to demonstrate the concepts of groups in Tableau.

- Create a visualization to demonstrate the concepts of sets in the Tableau.

- Create a visualization to demonstrate the concepts of joins in Tableau.

- Create a visualization to demonstrate the concepts of data blending in Tableau.

- Create a visualization to demonstrate the various charts in the Tableau.

- Create a visualization to demonstrate the concept of clustering in Tableau.

- Create a visualization to demonstrate mathematical functions in Tableau.

- Create a visualization to demonstrate LOD expressions in Tableau.

- Create a visualization to demonstrate animations in Tableau.

- Create a visualization to demonstrate dashboard in Tableau.

- Create a visualization to demonstrate story telling in Tableau.

- Create a visualization to demonstrate the difference between live and extract connection in Tableau.

**Text Books:**
1. TABLEAU DESKTOP POCKET REFERENCE: ESSENTIAL FEATURES, SYNTAX AND DATA VISUALIZATIONS by RYAN SLEEPER, SHROFF PUBLISHERS & DISTRIBUTORS PVT. LTD

**References:**
1. HANDS-ON DATA VISUALIZATION: INTERACTIVE STORYTELLING FROM SPREADSHEETS TO CODE by JACK DOUGHERTY, SHROFF PUBLISHERS & DISTRIBUTORS PVT. LTD

2. TABLEAU DATA VISUALIZATION COOKBOOK by ASHUTOSH NANDESHWAR, PACKT PUBLISHING

3. TABLEAU: CREATING INTERACTIVE DATA VISUALIZATIONS by ASHUTOSH NANDESHWAR, PACKT PUBLISHING

4. PRACTICAL TABLEAU: 100 TIPS, TUTORIALS, AND STRATEGIES FROM A TABLEAU ZEN MASTER (COLOR EDITION) by RYAN SLEEPER, SHROFF PUBLISHERS & DISTRIBUTORS PVT. LTD