



GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF ENGINEERING SYLLABUS

Subject Code : 3165202

Subject Name : Data Visualization

WEF Academic Year :	2021-22
Semester :	6
Category of the Course :	Open Elective

Prerequisite : Basics of Python Programming, Python Data Analysis.

Rationale : The graphical depiction of data is known as data visualization, and it is used to effectively and dynamically communicate insights to clients, customers, and stakeholders in general. It is a means to condense your findings and present them in a way that makes them easier to read and can be used to spot patterns or trends. This course will teach you how to design engaging charts and visuals that will appeal to your audience while also increasing their usefulness.

Course Scheme :

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
L	T	P	C	Theory		Tutorial/ Practical		
				University exams (ESE)	Progressive Assessment (PA)	External Practical /viva Exam(ESE)	Internal evaluation Practical /viva Exam(PA)	
3	0	2	4	70	30	30	20	150

Course Content :

Unit No.	Content	No. of Hours	Weightage (%)
1	Introduction to Data Visualization Tools Python Libraries for Visualization, Power BI, Tableau.	07	20%
2	Data Visualization Tools in Python Introduction to Matplotlib, Basic Plotting with Matplotlib, Line Plots, Area Plots, Histograms, Bar Charts, Pie Charts, Box Plots Scatter Plots, Bubble Plots.	08	25%
3	Advanced Visualization Tools Waffle Charts, Word Clouds Introduction to Seaborn: Seaborn functionalities and usage, Spatial Visualizations and Analysis in Python with Folium, Case Study.	07	20%



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4	Tableau initialization Tableau installation, Data source settings in tableau, Data Interpreter, Interface of Tableau sheet, Various menu options.	08	15%
5	Tableau initialization Tableau installation, Data source settings in tableau, Data Interpreter, Interface of Tableau sheet, Various menu options, Visualization using Tableau, Various graphs in tableau, Real world data visualization tasks.	10	20%
Total Hours :		40	100%

Textbook :

1. Core Python Programming - Second Edition, R. Nageswara Rao, Dreamtech Press.
2. Communicating Data with Tableau by Ben Jones, O'Reilly Media, Inc.

Reference Books :

1. Beautiful Visualization: Looking at Data through the Eyes of Experts (Theory in Practice) by by Julie Steele, O'Reilly Media, Inc.
2. Practical Tableau by Ryan Sleeper, O'Reilly Media, Inc.
3. Data Visualization with Python and JavaScript by Kyran Dale, O'Reilly Media, Inc.

Course Outcomes :

No.	Course Outcomes	RBT Level*
1	Understand usage of various visualization packages.	UN
2	Create various visualization charts.	CR
3	Analyze various Business applications and visualize it.	AN
4	Apply data visualization tools on various data sets.	AP

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create

Suggested Course Practical List :

1. Introduction to Matplotlib and Line Plots.
2. Use Waffle Charts, Word Clouds, and Regression Plots.
3. Prepare various charts using datasets.
4. Prepare Various graphs in tableau.



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List of Laboratory/Learning Resources Required :

- Software: Anaconda Distribution (<https://www.anaconda.com/>).
- Google Colab (<https://colab.research.google.com/>).
- Python with Data Visualization Libraries (Jupyter Notebooks).

Other Resources/MOOCs :

1. <https://cognitiveclass.ai/courses/data-visualization-python>
2. <https://in.coursera.org/learn/datavisualization>
3. <https://www.edx.org/course/data-science-visualization>

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