

# LAB WORK

Lab 1 - 2	<b>Foundations of Data Visualization</b> <ul style="list-style-type: none"><li>• Understand the principles of data visualization.</li><li>• History and evolution of data visualization.</li><li>• Compare effective and ineffective visualizations.</li><li>• Create basic plots using Python's Matplotlib.</li><li>• Overview of tools: Matplotlib, Seaborn, Plotly, Tableau, Power BI.</li></ul>
Lab 3 - 4	<b>Data Storytelling Basics</b> <ul style="list-style-type: none"><li>• Using visualizations to convey a narrative.</li><li>• Choosing the right chart type for the story.</li><li>• Adding annotations and emphasis to visualizations.</li><li>• Key principles of effective visualizations (e.g., clarity, simplicity, audience focus).</li></ul>
Lab 5 - 6	<b>Introduction to Python and Data Handling</b> <ul style="list-style-type: none"><li>• Introduction to Jupyter Notebook.</li><li>• Python basics: variables, data types, and loops.</li><li>• Setting up a Python environment (installation and IDE setup).</li><li>• Importing and handling datasets using Pandas.</li></ul>
Lab 7 - 8	<b>Data Cleaning and Preprocessing</b> <ul style="list-style-type: none"><li>• Handling missing values and outliers in datasets.</li></ul>

	<ul style="list-style-type: none"> <li>• Data aggregation and transformation.</li> <li>• Data validation and quality checks using Pandas.</li> </ul>
Lab 9 - 10	<b>Basic Visualization with Matplotlib</b> <ul style="list-style-type: none"> <li>• Anatomy of a Matplotlib figure (figures, axes, plots).</li> <li>• Creating simple charts: line, bar, and scatter plots.</li> <li>• Customizing plots: labels, titles, and legends.</li> <li>• Saving plots as image files.</li> </ul>
Lab 11 - 12	<b>Advanced Customization with Matplotlib</b> <ul style="list-style-type: none"> <li>• Using subplots for multi-panel visualizations.</li> <li>• Annotating plots and highlighting key data points.</li> <li>• Visualizing distributions (histograms, box plots, violin plots).</li> <li>• Saving and exporting figures.</li> <li>• Styling plots with color, fonts, and markers.</li> </ul>
Lab 13 - 14	<b>Getting Started with Seaborn</b> <ul style="list-style-type: none"> <li>• Overview of Seaborn and its features.</li> <li>• Creating categorical plots: bar, box, and violin plots.</li> <li>• Visualizing distributions: histograms, KDE plots, and pair plots.</li> </ul>
Lab 15 - 16	<b>Statistical Visualizations in Seaborn</b> <ul style="list-style-type: none"> <li>• Relational plots (scatterplot, lineplot).</li> <li>• Distribution plots (histplot, kdeplot).</li> <li>• Categorical plots (barplot, boxplot).</li> </ul>

# MIDS EXAMS

Lab 17 - 18	<b>Statistical Visualizations in Seaborn</b> <ul style="list-style-type: none"><li>• Correlation heatmaps and their interpretation.</li><li>• Joint plots and pair plots for relationship analysis.</li><li>• Regression plots and line fitting.</li><li>• Customizing aesthetics (themes, palettes).</li><li>• Working with grouped and aggregated data.</li></ul>
Lab 19 - 23	<b>Interactive Visualizations with Plotly</b> <ul style="list-style-type: none"><li>• Introduction to Plotly's framework and philosophy.</li><li>• Line, scatter, and bar charts in Plotly.</li><li>• Interactive dashboards and tooltips.</li><li>• 3D visualizations and geographic plots.</li></ul>
Lab 24 - 26	<b>Advanced Visualization Techniques</b> <ul style="list-style-type: none"><li>• Time-series visualizations.</li><li>• Network diagrams.</li><li>• Geospatial visualizations.</li><li>• Storytelling with data (narrative structure, annotations).</li></ul>
Lab 27 - 31	<b>Final Project and Presentation</b> <ul style="list-style-type: none"><li>• Work on a dataset of choice from domains like business,</li></ul>

	<p>healthcare, or environment.</p> <ul style="list-style-type: none"><li>• Create a series of visualizations to tell a story or derive insights.</li><li>• Present findings and receive peer and instructor feedback.</li></ul>
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