



# Data Visualization with Python

## Overview

One of the most important skills of successful data scientists and data analysts is the ability to tell a compelling story by visualizing data and findings in an approachable and stimulating way. In this course you will learn many ways to effectively visualize both small and large-scale data. You will be able to take data that at first glance has little meaning and present that data in a form that conveys insights.

This course will teach you to work with many Data Visualization tools and techniques. You will learn to create various types of basic and advanced graphs and charts like: Waffle Charts, Area Plots, Histograms, Bar Charts, Pie Charts, Scatter Plots, Word Clouds, Choropleth Maps, and many more!

## Learning Outcome

By ends of this course,

- You will also create interactive dashboards that allow even those without any Data Science experience to better understand data, and make more effective and informed decisions.
- You will learn hands-on by completing numerous labs and a final project to practice and apply the many aspects and techniques of Data Visualization using Jupyter Notebooks and a Cloud-based IDE.
- You will use several data visualization libraries in Python, including Matplotlib, Seaborn, Folium, Plotly & Dash.

## Who Should Attend

- Data scientists
- Data analysts



## Prerequisites

This course requires a working knowledge of the Python programming language and using Jupyter Notebooks.

## Course Outline

### Module 1: Introduction to Data Visualization Tools

In this module, you will learn about data visualization and some of the best practices to keep in mind when creating plots and visuals. You will also learn about the history and the architecture of Matplotlib and learn about basic plotting with Matplotlib. In addition, you will learn about the dataset on immigration to Canada, which will be used extensively throughout the course. Finally, you will briefly learn how to read csv files into a pandas dataframe and process and manipulate the data in the dataframe, and how to generate line plots using Matplotlib.

- Introduction to Data Visualization
- Introduction to Matplotlib
- Basic Plotting with Matplotlib
- Dataset on Immigration to Canada
- Line Plots

### Module 2: Basic and Specialized Visualization Tools

In this module, you learn about area plots and how to create them with Matplotlib, histograms and how to create them with Matplotlib, bar charts, and how to create them with Matplotlib, pie charts, and how to create them with Matplotlib, box plots and how to create them with Matplotlib, and scatter plots and bubble plots and how to create them with Matplotlib.

- Area Plots
- Histograms
- Bar Charts
- Pie Charts
- Box Plots
- Scatter Plots
- Basic Visualization Tools
- Specialized Visualization Tools

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### Module 3: Advanced Visualizations and Geospatial Data

In this module, you will learn about advanced visualization tools such as waffle charts and word clouds and how to create them. You will also learn about seaborn, which is another visualization library, and how to use it to generate attractive regression plots. In addition, you will learn about Folium, which is another visualization library, designed especially for visualizing geospatial data. Finally, you will learn how to use Folium to create maps of different regions of the world and how to superimpose markers on top of a map, and how to create choropleth maps.

- Waffle Charts
- Word Clouds
- Seaborn and Regression Plots
- Introduction to Folium
- Maps with Markers
- Choropleth Maps
- Advanced Visualization Tools
- Visualizing Geospatial Data

### Module 4: Sequence Mutation and Accumulation Patterns

We will present deeper knowledge on using lists, strings, and python objects in general. We will also cover how to use the accumulation pattern with lists and with strings. The final assignment will test your knowledge and skills through application, much like previous assessments and assignments did, though with a more difficult set of tasks now that you have learned the basics.

- Introduction: Transforming Sequences
- Mutability
- List Element Deletion
- Objects and References
- Aliasing
- Cloning
- Methods on Lists
- Append vs. Concatenate
- Non-Mutating Methods on Strings
- String Format Method
- The Accumulator Pattern with Lists
- The Accumulator Pattern with Strings

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- Accumulator Pattern Strategies
- Don't Mutate A List That You Are Iterating Through
- Course Feedback

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