

# Data Analysis & Visualization with Python



## Module 0 – Revisit Python Collections

- Lists & Tuples
- Dictionaries
- Comprehension & Loops

## Module 1 – Importing Data Sets

- The Problem
- Understanding the Data
- Python Packages for Data Science
- Importing and Exporting Data in Python
- Getting Started Analyzing Data in Python
- Accessing Databases with Python
- Hands-on Lab: Importing Datasets

## Module 2 – Data Wrangling

- Pre-processing Data in Python
- Dealing with Missing Values in Python
- Data Formatting in Python
- Data Normalization in Python
- Binning in Python
- Turning Categorical Variables into Quantitative Variables in Python
- Hands-on Lab: Data Wrangling

## Module 3 - Exploratory Data Analysis

- Exploratory Data Analysis
- Descriptive Statistics
- GroupBy in Python
- Correlation
- Correlation - Statistics
- Association between two categorical variables: Chi-Square
- Hands-on Lab: Exploratory Data Analysis

## Module 4 – Model Development

- Model Development
- Linear Regression
- Model Evaluation using Visualization
- Prediction and Decision Making
- Hands-on Lab: Model Development

## Module 5 -Introduction to Visualization Tools

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

## Module 6 -Basic Visualization Tools

- Area Plots
- Histograms
- Bar Charts

## Module 7 -Specialized Visualization Tools

- Pie Charts
- Box Plots
- Scatter Plots
- Bubble Plots