Data Visualization with Python

Training and Certification Syllabus

Duration: 3 Months

1. **Introduction**
   - Why Python Programming
   - Course Overview
   - Data Types and Operators
   - Arithmetic Operators
   - Variables and Assignment Operators
   - Integers and Floats
   - Booleans, Comparison Operators, and Logical Operators
   - Strings
   - Type and Type Conversion
   - Lists and Membership Operators
   - List Methods, Tuples, Sets
   - Dictionaries and Identity Operators
   - Compound Data Structure
   - Discussion and Doubt Clear
   - Assignment and Test

2. **Control Flow**
   - Conditional statements
   - Iteration/looping statements
   - Break, Continue
   - Zip and Enumerate
   - Discussion and Doubt Clear
   - Assignment and Test

3. **Function**
   - Defining Functions, Variable Scope
   - Documentation, Lambda Expressions
   - Iterators and Generators

4. **Scripting**
   - Python Installation
   - Scripting with Raw Input
   - Errors and Exceptions
   - Reading and Writing Files, Importing Local Scripts
   - The Standard Library, Techniques for Importing Modules
   - Discussion and Doubt Clear with Assignment and Test

5. **NumPy**
   - Introduction to NumPy, Why Use NumPy?
   - Creating and Saving NumPy ndarrays
   - Accessing, Deleting, and Inserting Elements Into ndarrays
   - Slicing ndarrays
   - Boolean Indexing, Set Operations, and Sorting
   - Manipulating ndarrays
   - Discussion and Doubt Clear with Assignment and test

6. **Pandas**
   - Introduction to Pandas, Why Use Pandas?
   - Creating Pandas Series and DataFrames, Accessing and Deleting Elements in Pandas Series, DataFrames
   - Arithmetic Operations on Pandas Series
   - Manipulate a Series, DataFrame
   - Dealing with NaN
   - Discussion and Doubt Clear with Assignment and Test

7. **Data Visualization**
   - Introduction to Data Visualization
   - Exploratory vs. Explanatory Analyses
   - Visualization in Python
   - What Makes a Bad Visual?
   - Data Types (Continuous vs. Discrete)
   - Identifying Data Types
   - Chart Junk , Data Ink Ratio
   - Bad Visual Quizzes ¸Using Color
   - Designing for Color Blindness
   - Tidy Data , Bar Charts
   - Absolute vs. Relative Frequency, Pie Charts, Histograms
   - Descriptive Statistics
   - Outliers and Axis Limits
   - Scales and Transformations
   - Bivariate Exploration of Data - Scatterplots and Correlation, Overplotting, Transparency, and Jitter , Heat Maps , Violin Plots, Box Plots, Clustered Bar Charts, Faceting, Line Plots
   - Multivariate Exploration of Data -Non-Positional Encodings for Third Variables, Color Palettes, Faceting in Two Directions, Adaptations of Bivariate Plots, Plot Matrices, Feature Engineering
   - Explanatory Visualizations - Revisiting the Data Analysis Process, Polishing Plots , Creating a Slide Deck with Jupyter
   - Discussion and Doubt Clear
   - Assignment and Test

8. **Project**

9. **Git & Github**
   - **What is Version Control?**
   - **Create A Git Repo**
   - **Review a Repo's History**
   - **Add Commits To A Repo**
   - **Tagging, Branching, and Merging**
   - **Undoing Changes**
   - **Working On Another Developer's Repository**
   - **Staying In Sync With A Remote Repository**

10. **Interview Preparation**

***In Assignment there is Mini Projects.**