Python DataScience:

MODULE I:

Introduction to IPython and NumPy (15 Hrs)

IPython Beyond Normal Python: Help and documentation in IPython, Keyboard Shortcuts in the IPython Shell, IPython Magic Commands, Input and Output History, IPython and Shell Commands, Errors and Debugging, Profiling and Timing Code. Introduction to NumPy: Understanding Data Types in Python, The Basics of NumPy Arrays, Computation on NumPy Arrays: Universal Functions, Aggregations.

MODULE II: Working with NumPy, Data Manipulation with Pandas (15 Hrs)

Computation on Arrays: Broadcasting, Comparisons, Masks, and Boolean Logic, Fancy Indexing, Sorting Arrays, Structured Data. Data Manipulation with Pandas: Introducing Pandas Objects, Data Indexing and Selection, Operating on Data in Pandas, Handling Missing Data.

MODULE III:

Working with Datasets using Pandas (15 Hrs) Hierarchical Indexing, Combining Datasets: Concat and Append, Combining Datasets: Merge and Join, Aggregation and Grouping, Pivot Tables, Vectorized String Operations, Working with Time Series, High-Performance Pandas -eval() and query().

MODULE IV: Visualization with Matplotlib (15 Hrs)

General MatplotLib, Simple Line Plots, Simple Scatter Plots, Density and Contour Plots, Histograms, Binnings, and Density, Customizing Plot Legends, Customizing Colorbars, Text and Annotation, Three-Dimensional Plotting in Matplotlib, Geographic Data with Basemap, Visualization with Seaborn.