

**Module Title : Python for Data Science**

**Duration : 5 days**

## Introduction

This course is for people who want to learn Python for the data science field in order to become data scientists.

## Course Prerequisite

Knowledge and experiences working with other programming languages is a bonus but are not necessarily required.

## Course Outlines

### Chapter 1: Introduction to Data Science with Python

- The Stages of Data Science
- Why Python?
- Python Environment and Editors
- The Basics of Python Programming
- Fundamental Python Programming Techniques
- Data Cleaning and Manipulation Techniques
- Abstraction of the Series and Data Frame
- Running Basic Inferential Analyses

### Chapter 2: The Importance of Data Visualization in Business Intelligence

- Shifting from Input to Output
- Why is Data Visualization Important?
- Why Do Modern Businesses Need Data Visualization?
- The Future of Data Visualization
- How Data Visualization is Used for Business Decision- Making
- Introducing Data Visualization Techniques

### Chapter 3: Data Collection Structures

- Lists
- Dictionaries
- Tuples
- Series
- Data Frames
- Panels

### Chapter 4: File I/O Processing and Regular Expressions

- File I/O Processing
  - Data Input and Output
  - Opening and Closing Files
  - File Object Attributes
  - Reading and Writing to Files
  - Directories in Python
- Regular Expressions
  - Regular Expression Patterns
  - Special Character Classes
  - Repetition Classes
  - Alternatives
  - Anchors

### Chapter 5: Data Gathering and Cleaning

- Cleaning Data
  - Checking for Missing Values
  - Handling the Missing Values
- Reading and Cleaning CSV Data
- Merging and Integrating Data
- Reading Data from the JSON Format
- Reading Data from the HTML Format
- Reading Data from the XML Format

### Chapter 6: Data Exploring and Analysis

- Series Data Structures
- Data Frame Data Structures
- Data Analysis
  - Statistical Analysis

- Data Grouping
- Iterating Through Groups
- Aggregations
- Transformations
- Filtration

## Chapter 7: Data Visualization

- Direct Plotting
  - Line Plot
  - Bar Plot
  - Pie Chart
  - Box Plot
  - Histogram Plot
  - Scatter Plot
- Seaborn Plotting System
  - Strip Plot
  - Box Plot
  - Swarm Plot
  - Joint Plot
- Matplotlib Plot
  - Line Plot
  - Bar Chart
  - Histogram Plot
  - Scatter Plot
  - Stack Plot
  - Pie Chart