



Python Data Analysis

Duration: 100 Hrs.

Course Highlights:

Basic Python

Introduction to Python

- Installing Python and Environment setup, basic Syntax.
- Variable, Identifier, Keywords, Comments, Indentation, Data types, Operators.

Decision Making & Control Flow

- if statement, if - else, if – elif -else, Nested if – else.
- While loop, for – in loop, Nested loop, Loop with else, pass statement, break and continue.

Functions

- Defining function, Function call, call by value or call by reference.
- Local and global variable, Recursion, Anonymous (lambda) function.
- Function: Types of Argument -Required argument, Keyword arguments, Default arguments, Variable-length arguments.

Modules & Packages

- Defining module, importing module, Module search path, Reloading a module.
- Defining & Importing package, Installing third party packages.

Numeric Types & Date-time

- Numeric type basics, Numbers-Hexadecimal, Octal and Binary Notation, Complex Numbers, Type casting, Numeric Functions, Random number generation.
- Date & Time.

String

- Creating a string, accessing characters of string, Immutability, Deleting and Updating string, String methods, String formatting Expressions.

List

- Creating a list, accessing list elements, adding, updating & deleting list.
- Functions used with list, List comprehension, Operations.

Tuple

- Creating a tuple, accessing elements of tuple, Immutability, Operations.
- Functions used with tuple.

Dictionary

- Creating a dictionary, accessing dictionary items, Adding, updating & deleting a dictionary
- Dictionary methods, Dictionary Comprehension.

Set

- Defining and creating set, set operations & Set methods, Set comprehension.

File Handling



- Defining a file, Types of files, File operations, File positions, File modes, File attributes.
- Pickle module.

Exception Handling

- Defining an exception, Exception handling techniques.
- Raising exception (raise), User defined exceptions, Nested try block, finally block.
- Python Logging, Python Assertion

Python Miscellaneous Topics

- Python Iterators, Python Generators.
- Python Closures, Python Decorators.

Advance Python

Object Oriented Programming

- OOP concepts, Method Overloading, Destroying Objects (Garbage Collection), Constructor.
- Inheritance, Method overriding, Operator overloading, Abstract method & class, Python Interface, Python Inner Class, Python Anonymous class & Objects.
- Python Singleton Class, Python Reflections, Python Enums, Wrapper Classes

Python Regular Expression

XML Parser

JSON Concepts

MySQL, SQLite & MongoDB

- Database Handling & CRUD Operation

Python Data Analysis

NumPy

- Data Science-overview
- NumPy Array-Concept: Slicing, Manipulation, Reshaping, Indexing, Array Attributes and Operations, Array Filter, NumPy Sorting & Searching.
- Matrix in NumPy, Handling Missing Data.
- NumPy Universal Functions, Working with Images.
- NumPy Random Data, Linear Algebra in NumPy.

Pandas

- Pandas Series, Pandas DataFrame, Applying Aggregations on DataFrame.
- Analysing Data, Cleaning Data, Correlation & Data Wrangling, Selection, Slicing, Merging, Joining & Comparing Data. Pandas Time Series.
- Processing Excel, Processing CSV & JSON Data.
- Pandas with Relational Tables & NoSQL Databases- CRUD Operation.

SciPy

- SciPy packages, SciPy Special Functions, Working with Polynomials.
- SciPy Constants, Optimizers, SciPy Graphs, SciPy Spatial Data, SciPy Interpolation, SciPy Sparse Data, SciPy Linear Algebra, SciPy Integration, SciPy Fourier Transforms

Scikit-Learn



- Regression-Linear Regression, Logistic Regression, Decision tree Algorithm.
- Classification, Clustering

Matplotlib

- Pyplot, Plotting, Sub Plot, Bar Plot, Scatter Plot, 3D-Plot.
- Line Chart, Pie Chart, Customizing Plots, Histogram.
- Working with Legend and axes, Chart Properties.
- Working with Images

Seaborn

- Styling Plots, Multiple Plots, Scatter Plot, Line Plot, Bar Plot, Count Plot, Box Plot, Violin Plot, Strip Plot, Factor Plot, Histogram, Pair Plot, Heatmap.

Project