

Data Analytics with Python Training

COURSE CONTENT

GET IN TOUCH



Multisoft Systems
B - 125, Sector - 2, Noida



(+91) 9810-306-956



info@multisoftsystems.com



www.multisoftsystems.com

About Multisoft

Train yourself with the best and develop valuable in-demand skills with Multisoft Systems. A leading certification training provider, Multisoft collaborates with top technologies to bring world-class one-on-one and certification trainings. With the goal to empower professionals and business across the globe, we offer more than 1500 training courses, which are delivered by Multisoft's global subject matter experts. We offer tailored corporate training; project Based Training, comprehensive learning solution with lifetime e-learning access, after training support and globally recognized training certificates.

About Course

Multisoft Systems offers a robust Data Analytics with Python training course designed for professionals and enthusiasts eager to delve into the world of data analytics. This course equips learners with the essential skills needed to analyze, interpret, and visualize data effectively using Python, one of the most popular programming languages for data science.

Module 1: Introduction to Python

- ✓ Define Python
- ✓ Overview of Python
- ✓ Understand why Python is Popular
- ✓ Setup Python Environment
- ✓ Understand Operands and Expressions
- ✓ The Companies using Python
- ✓ Different Applications where Python is Used
- ✓ Discuss Python Scripts on UNIX/Windows
- ✓ Values, Types, Variables
- ✓ Operands and Expressions
- ✓ Conditional Statements
- ✓ Loops
- ✓ Command Line Arguments
- ✓ Writing to the Screen
- ✓ Write your First Python Program
- ✓ Understand Command Line Parameters and Flow Control

Module 2: Sequences and File Operations

- ✓ Python files I/O Functions
- ✓ Numbers
- ✓ Strings and related operations
- ✓ Tuple - properties, related operations, compared with list
- ✓ List - properties, related operations
- ✓ Dictionary - properties, related operations
- ✓ Set - properties, related operations

Module 3: Deep Dive – Functions, OOPs, Modules, Errors and Exceptions

- ✓ Understand Python Standard Libraries
- ✓ Packages and Module - Modules, Import Options, sys Path
- ✓ Functions - Syntax, Arguments, Keyword Arguments, Return Values
- ✓ Function Parameters
- ✓ Global Variables
- ✓ Variable Scope and Returning Values
- ✓ Lambda - Features, Syntax, Options, Compared with the Functions
- ✓ Sorting - Sequences, Dictionaries, Limitations of Sorting
- ✓ Errors and Exceptions - Types of Issues, Remediation
- ✓ Object Oriented Concepts
- ✓ Modules Used in Python
- ✓ The Import Statements
- ✓ Module Search Path
- ✓ Package Installation Ways
- ✓ Errors and Exception Handling
- ✓ Handling Multiple Exceptions

Module 4: Introduction to NumPy, Pandas and Matplotlib

- ✓ Create arrays using NumPy
- ✓ Perform various operations on arrays and manipulate them
- ✓ Indexing slicing and iterating
- ✓ Read & write data from text/CSV files into arrays and vice-versa
- ✓ Create Series and Data Frames in Pandas
- ✓ Data structures & index operations in pandas
- ✓ Importing and exporting data
- ✓ Indexing and slicing of data structures in pandas
- ✓ Reading and Writing data from Excel/CSV formats into Pandas

- ✓ Create simple plots in matplotlib
- ✓ Grids, axes, plots, Markers, colours, fonts and styling
- ✓ Types of plots - bar graphs, pie charts, histograms, Contour plots
- ✓ Choose the right plot format for a problem at hand judiciously
- ✓ Scale and add style to your plots

Module 5: Data Manipulation

- ✓ Basic Functionalities of a data object
- ✓ Merging of Data objects
- ✓ Concatenation of data objects
- ✓ Types of Joins on data objects
- ✓ Exploring a Dataset
- ✓ Analysing a dataset

Module 6: Introduction to Machine Learning with Python

- ✓ Essential Python Revision
- ✓ Necessary Machine Learning Python libraries
- ✓ What is Machine Learning?
- ✓ Machine Learning Use-Cases
- ✓ Machine Learning Process Flow
- ✓ Machine Learning Categories
- ✓ Linear regression
- ✓ List the categories of Machine Learning
- ✓ Illustrate Supervised Learning Algorithms
- ✓ Identify and recognize machine learning algorithms around us

Module 7: Supervised Learning - I

- ✓ Understand What is Supervised Learning?
- ✓ Define Classification
- ✓ What is Classification and its use cases?

- ✓ What is Decision Tree?
- ✓ Algorithm for Decision Tree Induction
- ✓ Creating a Perfect Decision Tree
- ✓ Confusion Matrix
- ✓ What is Random Forest?
- ✓ Illustrate Logistic Regression & Polynomial Regression

Module 8: Dimensionality Reduction

- ✓ Introduction to Dimensionality
- ✓ Why Dimensionality Reduction
- ✓ PCA
- ✓ Scaling
- ✓ Factor Analysis
- ✓ Scaling dimensional model
- ✓ LDA

Module 9: Supervised Learning - II

- ✓ What is Naïve Bayes?
- ✓ How Naïve Bayes works?
- ✓ Implementing Naïve Bayes Classifier
- ✓ What is Support Vector Machine?
- ✓ Illustrate how Support Vector Machine works?
- ✓ Hyperparameter Optimization
- ✓ Grid Search vs Random Search
- ✓ Implementation of Support Vector Machine for Classification

Module 10: Unsupervised Learning

- ✓ What is Clustering & its Use Cases?
- ✓ What is K-means Clustering?
- ✓ How K-means algorithm works?

- ✓ How to do optimal clustering
- ✓ What is C-means Clustering?
- ✓ What is Hierarchical Clustering?
- ✓ How Hierarchical Clustering works?

Module 11: Association Rules Mining and Recommendation Systems

- ✓ What are Association Rules?
- ✓ Association Rule Parameters
- ✓ Apriori Algorithm
- ✓ Market Basket Analysis
- ✓ Calculating Association Rule Parameters
- ✓ Recommendation Engines
- ✓ How Recommendation Engines work?
- ✓ Collaborative Filtering
- ✓ Content Based Filtering

Module 12: Reinforcement Learning

- ✓ What is Reinforcement Learning
- ✓ Why Reinforcement Learning
- ✓ Elements of Reinforcement Learning
- ✓ Exploration vs Exploitation dilemma
- ✓ Epsilon Greedy Algorithm
- ✓ Markov Decision Process (MDP)
- ✓ Q values and V values
- ✓ Q – Learning
- ✓ α values

Module 13: Time Series Analysis

- ✓ What is Time Series Analysis?
- ✓ Importance of TSA
- ✓ Components of TSA
- ✓ Checking Stationarity
- ✓ Converting a non-stationary data to stationary
- ✓ TSA Forecasting
- ✓ White Noise
- ✓ AR model
- ✓ MA model
- ✓ Implementing Dickey Fuller Test
- ✓ Plot ACF and PACF
- ✓ ARMA model
- ✓ ARIMA model
- ✓ Generating the ARIMA plot

Module 14: Model Selection and Boosting

- ✓ What is Model Selection?
- ✓ Need of Model Selection
- ✓ Cross – Validation
- ✓ What is Boosting?
- ✓ How Boosting Algorithms work?
- ✓ Types of Boosting Algorithms
- ✓ Adaptive Boosting
- ✓ Cross Validation
- ✓ AdaBoost