



DATA SCIENCE ,MACHINE LEARNING ,AI

DATA SCIENCE WITH PYTHON

Who we are

Techeduxon has been a platform for global online technology education since 2015. We are now taking it up a notch higher by introducing ways of advanced learning to up-skill and cross-skill your profession with cutting-edge, customized programs. With our Top Tier IT & Enterprise training Courses, We enable you to the forefront & become 'Industry Ready' in this Advancing & Unforeseen Digital World with your upskill Innovations.

Data science with Python Course Overview

This course will help you learn the python programming required for the data science. With this course you will master the skill of how python is deployed for data science, work with pandas library for data science, data visualization,machine learning etc., along with real time projects.

- Introduction to Python for Data science
- OOPs Concept , expressions and functions
- Creating Pig & Hive UDF in python
- Deploying Python for MapReduce Programming.

Pre - Requisites for learning Data science with Python course

To learn this course you don't need any specific knowledge. Just a Knowledge of Basic Programming can help.

Target audience

Software & IT professionals, Analytics professionals.



Course Modules

- Introduction to the Data Science program using Python
- Python Basic Constructs
- Math's for probability and statistics - DS
- OOps Concept in python
- Mathematical computing using NumPy
- Scientific Computing using Scipy
- Manipulation of the data
- Data visualization with Matplotlib
- Machine Learning using Python
- Supervised Learning and Unsupervised Learning
- Python integration with Spark i.e.,(self paced)
- Dimensionality Reduction

Course Content

Introduction to the Data Science program using Python

- What is Data Science, what does a data scientist do & Various examples of Data Science in the industries
- How Python is deployed for Data Science application
- Various steps in the Data Science process like data wrangling, data exploration and selecting the model
- Introduction to the Python programming language
- Some Important Python features and how is Python different from other programming languages
- Python installation, and Anaconda Python distribution for Windows, Linux and Mac
- How to run a sample Python script, Python IDE working mechanism



- Running some Python basic commands & Python variables, data types and keywords.

Assignment : How to Install Python Anaconda for the Windows, Linux and Mac

Python basic constructs

- Introduction to the Basic construct in Python
- Understanding indentation like tabs and spaces and Python built-in data types
- Basic operators in Python & Loop and control statements like break, if, for, continue, else, range() and more.

Assignment

- Create your first Python program
- Write a Python function (with and without parameters)
- Use Lambda expression
- Write a class and Create a member function and a variable
- Create an object and write a for loop to print all odd numbers

Maths for Probability and DS - Statistics

- Central Tendency and variability
- Hypothesis Testing
- Anova, Correlation and R Regression
- Probability Definitions and Notation
- Joint probabilities
- The Sum Rule, Conditional Probability, and the Product Rule
- Bayes Theorem

OOPs Concept in Python

- Understanding the OOPs paradigm like encapsulation, inheritance, polymorphism and abstraction
- What are access modifiers, instances, class members, Classes and objects



- Function parameter and return type functions and Lambda expressions.

Assignment : Write a Python program and incorporate the OOPs concept

Mathematical computing using NumPy

Introduction to mathematical computing in Python & What are arrays and matrices, array indexing, array math, Inspecting a numpy array, Numpy array manipulation

Assignment

- How to import numpy module
- Create array using ND-array
- Calculate standard deviation on array of numbers & calculate correlation between two variables.

Scientific computing using Scipy

- Introduction to scipy, building on top of numpy & What are the characteristics of scipy
- Various subpackages for scipy like Signal, Integrate, Fftpack, Cluster, Optimize, Stats and more, Bayes Theorem with scipy

Assignment : Import of scipy & Applying Bayes Theorem on the given Dataset.

Manipulation of Data

- What is a data Manipulation. Using Pandas library
- Numpy dependency of Pandas library
- Series object in pandas and Dataframe in Pandas
- Loading and handling data with Pandas



- How to merge data objects and Concatenation and various types of joins on data objects, exploring dataset

Assignment

- Performing data manipulation with Pandas by handling tabular datasets that includes variable types like float, integer, double and others.
- Cleaning dataset, Manipulating dataset and Visualizing dataset

Data visualization with Matplotlib

- Introduction to Matplotlib
- Use Matplotlib for plotting graphs and charts like Scatter, Bar, Pie, Line, Histogram and more
- Matplotlib API

Assignment

- Using Matplotlib for creating pie, scatter, line and histogram.
- Subplots and Pandas for built-in data visualization.

Machine Learning using Python

- Revision of the topics in Python (Pandas, Matplotlib, numpy, scikit-Learn)
- Introduction to machine learning & Need of Machine learning
- Types of machine learning and workflow of Machine Learning
- Uses Cases in Machine Learning, its various algorithms
- What is supervised learning and Unsupervised Learning

Assignment : Prepare a Demo on ML Algorithms

Supervised learning and Unsupervised learning

Supervised learning



- What is linear regression
- Step by step calculation of Linear Regression
- Linear regression in Python
- Logistic Regression and what is classification
- Decision Tree, Confusion Matrix, Random Forest, Naive Bayes classifier(Self paced)Support Vector Machine(self paced),xgboost(self paced)

Unsupervised Learning

- Introduction to unsupervised learning
- Use cases of unsupervised learning
- What is meant by clustering
- Types of Clustering (self paced) , Exclusive Clustering, Overlapping Clustering, Hierarchical Clustering (Self paced)
- What is K-means clustering & Step by step calculation of k-means algorithm
- Association Rule Mining(self-paced), Market Basket Analysis(self-paced), Measures in association rule mining(self-paced)-support, confidence, lift
- Apriori Algorithm

Python integration with Spark i.e.,(self paced)

- Introduction to pyspark
- Who uses pyspark, need of spark with python
- Pyspark installation and Pyspark fundamentals
- Advantage over mapreduce, pyspark
- Use-cases pyspark and demo.

Assignment

- Demonstrating Loops and Conditional Statements



- Tuple: related operations, properties, list, etc.
- List : operations, related properties
- Set: properties, associated operations, dictionary & operations, related properties.

Dimensionality Reduction

- Introduction to Dimensionality and Need of Dimensionality Reduction
- PCA ,Factor Analysis & LDA

Assignment: Practice Dimensionality reduction Techniques ,PCA, Factor Analysis, t-SNE, Random Forest, Forward and Backward feature

Projects & Assignments

Our Expert trainers will provide the real time Projects & Assignments.

