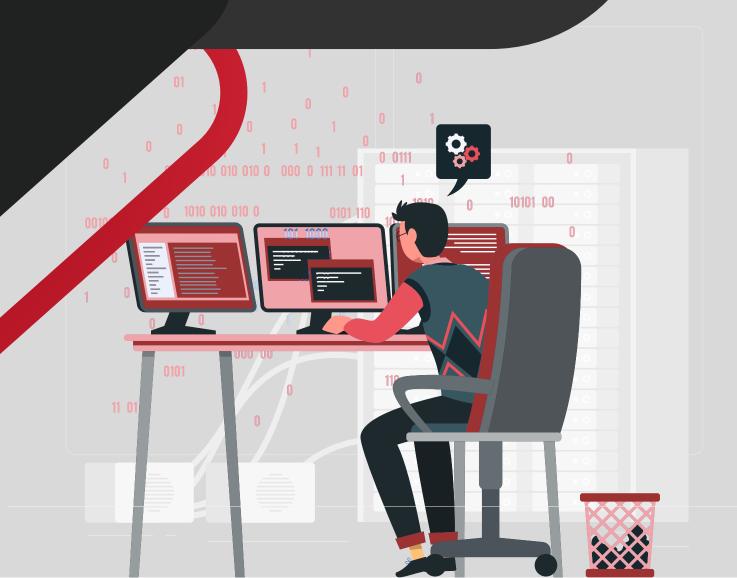# Data Science with Python

Introduction to Data Science

- ▶ **What is Data Science**
- ▶ **What does data science involve**
- ▶ **Life cycle of Data Science**
- ▶ **Tools in Data Science**
- ▶ **Introduction to Python**

Python Environment Setup and Essentials

- ▶ **Introduction to python**
- ▶ **Software installation**
- ▶ **Basic operators and functions**
- ▶ **Data types in python**
- ▶ **Conditional statements**

Mathematical Computing With Python (Numpy)

- ▶ **Introduction to Numpy**
- ▶ **Introduction to numpy arrays**
- ▶ **Accessing Array Elements**
- ▶ **Indexing, Slicing, Iteration, Indexing with Boolean Arrays**
- ▶ **Dealing with Flat files using numpy**

- Mathematical functions
- Statistical functions
  (mean, median, average, standard deviation)
- Array operations

Introduction to Scientific Computing (Scipy)

- Save and search as a report
- Editing reports
- Creating reports with visualizations charts and tables

Data Manipulation With Pandas

- Introduction to Pandas
- Defining data structures
- Understanding Data frames
- Importing Data from various sources (Csv, txt, excel etc)
- Missing values Data
- Operations File read
- Operations Descriptive
- Statistics

Data Visualization Using Matplotlib

- What is Data Science
- What does data science involve
- Life cycle of Data Science
- Tools in Data Science
- Introduction to Python

Data Visualization Using Seaborn

- Create plots like scatter plot
- Histogram
- Bar graph
- Pie chart using Seaborn Grid
- Axes
- Plots
- Markers
- Colour
- Fonts
- Styling.

Machine Learning Using scikit-learn

- **Machine learning Process Flow**
- **Machine learning categories**
- **Feature selection and extraction in machine learning**
- **Supervised learning algorithms**
- **Regression**

    Simple linear Regression

    Applications of linear regression

    Building regression models using python

    Process to implement linear regression

    Coefficient of determination (R- Squared)

    Accuracy of model

- **Multiple linear Regression**
    - Classification
    - Logistic Regression
    - Building Logistic Regression Model Understanding
    - Standard model metrics

- **Decision Tree Random Forest**
- **Support Vector Machines K – NN**
- **Naive Bayes classifier**
- **Model evaluation techniques – concepts of confusion matrix, threshold**
- **Evaluation with ROCR**
- **Unsupervised machine learning algorithms**
- **K-Means Clustering**

- ▶ Hierarchical Clustering
- ▶ Aprior Association Algorithm

Web Scraping in Python

- ▶ **Working with Beautiful Soap**
- ▶ **Parsing HTML and XML**
- ▶ **Navigating the document**
- ▶ **Handling CSV files**
- ▶ **Parsing JSON into Python**

Introduction to Deep learning

- ▶ **Introduction to Deep Learning**

GitHub

- ▶ **Creating a Git Account**
- ▶ **Cloning the repository**
- ▶ **Adding the file**
- ▶ **Committing the file**
- ▶ **Git push**
- ▶ **Removing the file**