

SYLLABUS

Roadmap to Data Science

BENEFITS

- ✓ GUEST LECTURES ON WEEKENDS.
- ✓ GOODIES AND APPRECIATION LETTER TO TOP PERFORMERS.
- ✓ RECORDINGS WILL BE PROVIDED AFTER THE END OF CLASS

DURATION - 3 Months

Course 1 : Python Basic

You will be introduced to one of the most popular programming languages in the world by covering its basic concepts like data types, functions, loops etc.

Introduction to Python

Python Installation, Features of Python, Variables and Memory, Print Statement, Data Types in Python, Arithmetic Operations in Python

Python Strings

User-input in Python, String Operations, String Formatting and f-String, Sample Program to print a Greeting Message

Conditionals in Python

Control Flow in Python, If, Else, Elif Statements, Logical Operators , Comparison Operators

Basic Data Structures in Python

Lists, Tuples, Sets , Dictionaries

Looping in Python

Indentation , Booleans, Range Function, For Loops, While Loops

Functions in Python

Defining a function, Passing Parameters to a function, Calling a function

Built-in Functions in Python

CLambda, Map, Filter, Zip

Built-in Modules and Error Handling in Python

Import Statement, Handling errors in Python, Read, Write, Append Operations in external files

Generators and Decorators in Python

Generator-Function, Generator-Object, Understanding Decorators, Decorator Syntax, Arguments in Decorator Function

Object-Oriented Programming in Python

Basic introduction to OOPS, Class, methods, objects, 'Self' keyword and Magic Methods, Instance Variables and Class, Variables, Overriding in Python, Polymorphism, Abstraction, Encapsulation, Inheritance

Course 2 : Python Advanced

This course is a level up as it covers advanced concepts of Python application in real world like data visualization, openCV, web scraping etc

Data Visualization in Python

Introduction to libraries, Handling Data - Numpy, Pandas, Basic plots using Matplotlib, Adding style using Seaborn

Basics of OpenCV

Opening & Capturing using cv2, Basic image operations, Color filters in cv2, Masking images using cv2

Searching the Internet

GoogleSearch library, Wikipedia library, Commonly used functions and operations for both libraries

Web Scraping using BeautifulSoup

Introduction to bs4, Using urllib to access web, Scraping data using bs4, Extracting various tags

What is Selenium?

Introduction, Automation using Selenium

WordCloud Library

Scraping data using keywords, Tokenization of data, Creating custom WordClouds

Projects in Week 1

Face Detection using OpenCV, Working with Google Search Library, Wikipedia Library, Web, Scraping using BeautifulSoup, Making custom word cloud, Automation using Selenium, Virtual Assistant using Python

Development in Python using Flask

Routing, Rendering, Static Files, Inheritance, Forms and Validation, HTTPS methods Retrieving data, Message flashing, Database connectivity, Deploying the app

Course 3 : Data Science

In this course, you will learn all about Data Science concepts including the data science life cycle along with its application using Python.

Feature Selection Mechanisms

Correlation, LDA, PCA, RFE, Chi Square

Data Science Life Cycle

Getting business requirements, Data Extraction, Data preprocessing, Data Exploration, Data Cleaning, Feature Engineering, Data Scaling and Normalization , Feature selection, Data Modelling, Model Evaluation and Performance, Model Deployment

Data Extraction – SQL and Pyspark

How to implement Spark with Python, Data Frames, SQL

Data Modelling

Train test split, Basics of Machine Learning, Regression and Classification algorithms, supervised, semi supervised and unsupervised learning

Model Deployment and maintenance –Django/Flask application

What is Model Deployment? What is Flask? Machine Learning Model, Create the Webpage

Data Preprocessing and Cleaning

Filling missing values, Data Scaling, Data Normalization, outlier analysis, Encodings

Time Series Analysis: AR, MA and ARIMA models

ARMA Model, ARIMA Model

Mathematics for Data Science

Linear Algebra, Calculus , Central limit theorem, Descriptive statistics, Probability distributions, Hypothesis Testing , Central Limit Theorem

Data Exploration

Creating charts and visualizations to get an understanding of the data(Matplotlib, Seaborn)

Model performance and evaluation

MSE, RMSE, Rsquare, accuracy, confusion_matrix, precision, recall, f1_score, roc_auc_score, AIC, loss function

Introduction to Data Science

Applications of Data Science, Tools used for Data Science - , Excel, R, SAS, Python, SQL, Tableau, PowerBI, Cloud Utilities, AutoML

Introduction to Python for Data Science - Libraries

Numpy(Functions), Pandas (Functions) , Scikit Learn(Functions)