Python for Data Analytics

Course Overview

This comprehensive Python for Data Analytics course outline takes you from the absolute basics of programming to advanced machine learning and data pipelines

Course Description

This course equips you with the practical programming skills needed to turn raw data into actionable business insights. You will learn to automate data collection, clean messy datasets, perform statistical analysis, and build compelling data visualizations using industry-standard libraries like Pandas, NumPy, Matplotlib, and Scikit-Learn. By the end of this course, you will be able to discover hidden patterns, make data-driven predictions, and communicate complex findings clearly to stakeholders.

Learning Curriculum

Module 1

Python Programming Fundamentals

Setting up the Environment: Navigating Jupyter Notebook and Anaconda.Core Concepts: Variables, data types, and control flow (loops, if-else statements).Data Structures: Lists, dictionaries, tuples, and sets.Functions & Modules: Writing custom functions and importing packages

Module 2

Data Manipulation & Cleaning (NumPy & Pandas)

NumPy Arrays: Introduction to N-dimensional arrays, mathematical operations, and vectorization.Pandas DataFrames: Importing/exporting datasets (CSV, Excel).Data Cleaning: Handling missing values, removing duplicates, normalizing data, and data formatting.Data Transformation: Merging, joining, grouping, and filtering large datasets

Module 3

Exploratory Data Analysis (EDA) & Statistics

Descriptive Statistics: Calculating mean, median, standard deviation, and variance.Handling Text & Time Series: Working with datetime objects and basic Natural Language Processing (NLP) text mining.Correlation & Insights: Identifying patterns, trends, and outliers within a dataset

Module 4

Data Visualization (Matplotlib & Seaborn)

Basic Plotting: Creating scatter plots, line charts, and bar graphs with Matplotlib.Advanced Visualizations: Generating heatmaps, box plots, and distribution charts using Seaborn.Storytelling with Data: Designing clear, actionable, and visually appealing dashboards

Module 5

Predictive Analytics & Machine Learning

Scikit-Learn Basics: Overview of predictive modeling and building data pipelines.Regression Models: Applying linear regression to predict continuous variables.Classification Models: Introduction to evaluating models using metrics like accuracy, precision, and recall

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