BLACKBIRD
FOR TRAINING

Advanced Data Analysis with Python Course

Cape Town (South Africa)

14 - 18 July 2025

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Advanced Data Analysis with Python Course

Introduction: Advanced Data Analysis with Python Course

Unlock the power of data with our Advanced Data Analysis with Python course. This intensive program is designed for professionals who want to deepen their understanding of data analysis techniques using Python. Dive into advanced statistical methods, machine learning algorithms, and data visualization tools to uncover actionable insights from complex datasets. Whether you're aiming to enhance your analytical skills or lead data-driven projects, this course will equip you with the knowledge and practical experience to excel in the evolving field of data science.

Course Objectives: Advanced Data Analysis with Python

- Master advanced statistical techniques for in-depth data analysis.
- Develop proficiency in machine learning algorithms for predictive modeling.
- Gain skills in data cleaning and preprocessing to handle complex datasets.
- Learn to create compelling data visualizations with Python libraries.
- Apply data analysis methods to real-world business problems and scenarios.
- Enhance your ability to derive actionable insights and make data-driven decisions.
- Build and evaluate models for regression, classification, and clustering tasks.
- Understand best practices for data analysis and interpretation.

Course Outlines: Data Analysis with Python Course

Day 1: Introduction to Python for Data Analysis

- Overview of Python and its libraries for data analysis.
- Setting up the Python environment and tools Jupyter Notebooks, Anaconda.
- Introduction to data types, structures, and basic operations in Python.
- Hands-on exercises with NumPy and pandas for data manipulation.

Day 2: Data Cleaning and Preprocessing

- Techniques for cleaning and preparing data for analysis.
- Handling missing values and outliers in datasets.
- Data transformation and normalization methods.
- Using pandas to perform data wrangling and feature engineering.

Day 3: Advanced Data Analysis Techniques

- Applying statistical methods to analyze data distributions and relationships.
- Introduction to hypothesis testing and confidence intervals.
- Implementing correlation and regression analysis using Python.
- Hands-on exercises with real datasets to apply advanced techniques.

Day 4: Data Visualization and Interpretation

- Creating effective visualizations with Matplotlib and Seaborn.
- Designing charts and plots to illustrate data trends and patterns.
- Interpreting and communicating results through visual storytelling.
- Developing interactive visualizations using Plotly.

Day 5: Machine Learning and Model Building

- Introduction to machine learning concepts and algorithms.
- Building and evaluating regression and classification models with sci-kit-learn.
- Techniques for model validation and performance assessment.
- Applying machine learning models to solve real-world problems and case studies

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