Advanced Analytics with Python Training Course

Professional Development Training Course Outline

Category	Business Intelligence	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Advanced Analytics with Python Training Course is designed for professionals who aim to harness the power of Python for data-driven decision-making. This course focuses on equipping participants with practical skills in data manipulation, statistical analysis, predictive modeling, and machine learning. By combining theoretical knowledge with hands-on exercises, participants will gain the expertise to analyze complex datasets, generate actionable insights, and implement solutions that drive business performance.

Participants will explore advanced Python libraries such as Pandas, NumPy, Scikit-learn, and Matplotlib to perform sophisticated analytics tasks. The course emphasizes real-world applications of analytics, including predictive modeling, customer segmentation, risk analysis, and optimization techniques. With an interactive curriculum, participants will develop the ability to interpret results, present findings effectively, and contribute to data-driven strategies within their organizations.

Programme Curriculum

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Course Objectives

1. Master advanced data manipulation techniques using Python libraries such as Pandas and NumPy
2. Apply statistical and inferential analysis for business intelligence and decision-making
3. Develop predictive models using machine learning algorithms in Scikit-learn
4. Implement data visualization strategies with Matplotlib, Seaborn, and Plotly
5. Understand feature engineering and data preprocessing for high-quality analytics
6. Apply regression, classification, and clustering algorithms in real-world scenarios
7. Conduct time-series forecasting for business trend prediction
8. Perform sentiment analysis and text mining using Python NLP tools
9. Optimize business processes using prescriptive analytics techniques
10. Integrate Python analytics workflows into organizational reporting systems
11. Design and evaluate model performance using cross-validation and metrics
12. Develop dashboards and reports for effective data communication
13. Solve complex analytics problems through hands-on case studies and projects

Organizational Benefits

- Improved decision-making with data-driven insights
- Enhanced predictive capabilities for business strategy
- Optimized operational processes and resource allocation
- Better customer segmentation and targeted marketing
- Increased efficiency in analytics workflows
- Standardized data reporting and visualization practices
- Reduced risk through predictive and prescriptive analytics
- Accelerated problem-solving with automated data models
- Strengthened competitive advantage in the market
- Upgraded internal analytics capabilities and skill sets

Target Audiences

1. Data analysts seeking advanced Python skills
2. Business intelligence professionals
3. Data scientists aiming to enhance Python analytics proficiency
4. IT professionals involved in data management
5. Business managers interested in data-driven strategies
6. Financial analysts requiring predictive modeling skills
7. Marketing professionals focusing on customer analytics
8. Students and researchers in analytics, statistics, or related fields

Course Duration: 10 days

Course Modules

Module 1: Introduction to Advanced Python for Analytics

- Python programming best practices for analytics
- Overview of advanced Python libraries
- Data types, structures, and manipulation techniques

- Handling large datasets efficiently
- Integration with analytics tools and platforms
- Case Study: Python-driven sales data analysis

Module 2: Data Wrangling and Preprocessing

- Cleaning and transforming datasets
- Handling missing values and outliers
- Feature engineering techniques
- Encoding categorical data
- Scaling and normalization methods
- Case Study: Customer churn data preprocessing

Module 3: Exploratory Data Analysis (EDA)

- Descriptive statistics and data summarization
- Visualization techniques for insights
- Correlation and covariance analysis
- Detecting patterns and anomalies
- Identifying trends for predictive modeling
- Case Study: Market segmentation using EDA

Module 4: Statistical Analysis with Python

- Hypothesis testing and confidence intervals
- ANOVA and chi-square tests
- Probability distributions and simulations
- Correlation and regression analysis
- Interpreting statistical outputs for business
- Case Study: Financial risk analysis

Module 5: Predictive Analytics and Machine Learning Overview

- Supervised vs. unsupervised learning concepts
- Model selection and evaluation metrics
- Overfitting, underfitting, and regularization
- Introduction to regression and classification algorithms
- Workflow for predictive analytics projects
- Case Study: Predicting loan default using ML

Module 6: Regression Models

- Linear regression techniques
- Multiple and polynomial regression
- Model validation and diagnostics
- Feature selection and dimensionality reduction
- Regression optimization strategies
- Case Study: Sales forecasting using regression

Module 7: Classification Techniques

- Logistic regression

- Decision trees and random forests
- Support vector machines
- Model evaluation metrics (accuracy, precision, recall)
- Handling imbalanced datasets
- Case Study: Fraud detection using classification

Module 8: Clustering and Unsupervised Learning

- K-means clustering
- Hierarchical clustering
- DBSCAN and density-based methods
- Evaluating cluster quality
- Real-world applications of clustering
- Case Study: Customer segmentation for marketing campaigns

Module 9: Time-Series Analysis and Forecasting

- Components of time-series data
- Trend, seasonality, and cyclic patterns
- ARIMA, SARIMA models
- Forecasting accuracy and validation
- Visualizing time-series trends
- Case Study: Inventory demand forecasting

Module 10: Natural Language Processing (NLP) with Python

- Text preprocessing and tokenization
- Sentiment analysis techniques
- Topic modeling with LDA
- Text classification and vectorization
- Applying NLP to social media data
- Case Study: Customer feedback sentiment analysis

Module 11: Advanced Visualization and Reporting

- Interactive dashboards with Plotly and Dash
- Advanced charting with Matplotlib and Seaborn
- Custom visual storytelling for stakeholders
- Automating reports with Python
- Data storytelling best practices
- Case Study: Executive dashboard creation

Module 12: Model Deployment and Automation

- Model serialization and deployment strategies
- Automation of analytics pipelines
- Scheduling and monitoring workflows
- API integration for model usage
- Maintaining model performance over time
- Case Study: Automated sales prediction system

Module 13: Big Data Analytics with Python

- Working with Spark and PySpark
- Handling distributed datasets
- Parallel processing for large-scale analytics
- Integration with cloud platforms
- Performance optimization techniques
- Case Study: Analyzing e-commerce big data

Module 14: Prescriptive Analytics and Optimization

- Decision analysis and optimization methods
- Linear and nonlinear programming
- Scenario and sensitivity analysis
- Resource allocation techniques
- Applying prescriptive models in business
- Case Study: Supply chain optimization

Module 15: Capstone Project

- End-to-end analytics project workflow
- Data collection, preprocessing, and exploration
- Model building, evaluation, and deployment
- Visualization and presentation of results
- Collaboration and documentation practices
- Case Study: Comprehensive business analytics project

Training Methodology

- Interactive instructor-led sessions
- Hands-on exercises and real-world datasets
- Practical case studies for each module
- Group discussions and problem-solving sessions
- Step-by-step guidance on Python analytics workflows
- Continuous assessment through quizzes and mini-projects

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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