

DATA VISUALIZATION USING PYTHON



**SEPTEMBER
14-17, 2026**



Course Overview

This certification workshop is designed to equip executives and business professionals with practical skills in Python programming, data analytics, automation, and machine learning. Participants will learn how to analyze data, automate routine tasks, create insightful visualizations, and apply machine learning techniques to solve real-world business and banking challenges. Through hands-on exercises and industry-focused case studies, the program enables participants to leverage Python for data-driven decision-making and operational efficiency.

WHO SHOULD ATTEND?

- Banking & Financial Sector Professionals
- Business, MIS & Data Analysts
- Finance, Audit & Risk Professionals
- Operations & Process Improvement Teams
- IT & Digital Transformation Professionals
- HR, Marketing & Customer Analytics Teams
- Managers, Department Heads & Decision-Makers
- Professionals interested in Data Analytics, Automation & Machine Learning

What This Workshop Is About

This workshop provides a practical introduction to Python as a powerful tool for data analysis, automation, and business intelligence. Participants will gain hands-on experience in processing and

visualizing data, automating reporting tasks, and applying machine learning techniques to support strategic decision-making and enhance organizational performance.

COURSE OUTLINE

Day 1: Python Programming & Data Analytics Foundations

- Introduction to Data Science
- Applications of Python in Banking
- Setting Up Python Environment
- Python Programming Fundamentals
- Variables and Data Types
- Basic Operations and Expressions
- Logical Building and Problem Solving
- Conditional Statements

FEE: PKR 72,000 per participant
Excluding Sales tax

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- Loops and Iterations
- Lists and List Operations
- Tuples
- Dictionaries
- Functions
- File and Folder Handling
- Exception Handling
- Practical Python Programming Exercises

Day 2: Data Handling with Python

- Introduction to NumPy
- NumPy Arrays
- Array Creation and Manipulation
- Vectorized Operations
- Mathematical and Statistical Operations
- Financial Calculations with NumPy
- Introduction to Pandas
- Series and DataFrames
- Importing Data from Excel
- Reading CSV and Text Files
- Reading Multiple Excel/CSV Files
- Exporting Data to Excel and CSV
- Data Filtering and Sorting
- Data Aggregation and Grouping
- Merging and Joining Data
- Data Type Conversion
- Handling Missing Data

- Handling Duplicates
- Data Validation and Integrity Checking
- Handling Outliers

Day 3: Python for Automation & Large-Scale Data Processing

- Automation of Daily Tasks Using Python
- Automated Excel Report Generation
- Automated Data Entry and Data Processing
- Automated File and Folder Management
- Batch Processing of Multiple Files
- Automated Report Consolidation
- Automated Email and Report Distribution
- Scheduled Python Tasks
- Working with Excel using Python
- Excel Formulas and Formatting with Python
- Generating Management Reports
- Introduction to Data Beyond Excel
- Limitations of Excel for Large Datasets
- Processing Data Larger Than Excel Row Limits
- Memory-Efficient Data Processing with Python
- Chunk-Based Data Processing
- Processing Large CSV and Text Files
- Working with Parquet Files
- Working with Databases Using Python
- SQL and Python Integration
- Extracting Large Datasets from Databases
- Data Processing Pipelines
- Practical Large-Dataset Processing

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Day 4: Data Visualization, Machine Learning & Business Applications

- Data Visualization with Python
- Customized Charts and Graphs
- Interactive Data Visualization
- Dashboard-Oriented Reporting
- Word Clouds and Text Visualization
- Introduction to Machine Learning
- Preparing Data for Machine Learning
- Training and Testing Data
- Decision Trees
- Random Forests
- Naive Bayes Classifier
- Linear Regression
- Logistic Regression
- Multi-Layer Perceptron
- Model Evaluation
- Machine Learning with Scikit-learn
- Introduction to Keras and PyTorch
- Business and Banking Applications of Machine Learning
- End-to-End Python Data Analytics Project
- Automated Banking Data Analysis and Reporting

FACILITATOR

Mr. Hassan Raza

Dr. Hassan is a highly accomplished academic and technology professional, holding a Gold Medal in Computer Science along with MS and PhD degrees from FAST-NUCES. His research interests include information extraction and processing in low-resource environments, text mining, and text summarization techniques. With extensive experience in teaching and professional training, he has conducted numerous workshops and training programs in Artificial Intelligence (AI), Deep Learning, Machine Learning, Data Mining, and Data Analytics. He has successfully delivered several professional development programs at NIBAF-Pak and is currently serving as an Assistant Professor at the FAST School of Computing, Department of Artificial Intelligence and Data Science, NUCES Islamabad, where he has been contributing to academia and research for the past nine years.

**REGISTRATION
DEADLINE** | **10 SEPTEMBER
2026**

