INTERNATIONAL TRAINING INSTITUTE

DATA ANALYTICS
WITH PYTHON

5-Day Course



Course Overview

Every organisation collects data, but very few people know how to turn it into something useful. This course teaches participants how to clean, explore, analyse and present real data using Python, one of the most in-demand skills in today's workplace.

The course starts from the basics. Participants will learn Python step by step, then move on to loading, joining, cleaning and preparing data using Pandas. They will explore and analyse data to find trends, patterns and relationships, present their findings through clear and interactive charts, and finish by building their own dashboard and completing a full analytics project.

Participants will learn to write and understand the code themselves. Along the way, they will also learn how to use AI tools to generate suggestions, check code, explain errors and improve their work, helping them work faster while understanding what they are doing.

As a bonus, the course introduces AI-assisted data analytics, including asking questions about data in plain English, connecting to live data, building a basic prediction model and generating reports with AI. Participants will also explore offline AI tools that work without an internet connection.

All training is hands-on and based on practical, real-world datasets. No previous programming experience is required. By the end of the course, participants will have practical data analytics skills they can apply at work, along with a completed project of their own.

Learning Outcomes

By the end of this course, participants will be able to:

1. Understand the role of data analytics in supporting decision-making
2. Write basic Python programs using decisions, loops and functions
3. Load data from Excel, CSV files and databases
4. Join related tables and understand how keys connect data
5. Clean and prepare raw data using Pandas
6. Explore and analyse data to identify trends, patterns and relationships
7. Create clear and interactive visualizations to present analysis
8. Build interactive dashboards for reporting
9. Use AI tools to support coding and data analysis
10. Complete a full data analytics project from raw data to final insights

Module 1: Introduction to Data Analytics and Python

Topics Covered:

- Understanding data analytics and its role in decision-making
- The data analytics process: from raw data to insights
- Types of data and data sources
- Installing and setting up Python, Anaconda and Jupyter Notebook
- Introduction to Google Colab
- Python basics: variables, data types and lists
- Decision making with if and else
- Loops in Python
- Writing simple functions

Learning Outcome:

Participants will understand the purpose and process of data analytics, set up the required software, and write basic Python programs using decisions, loops and functions.

Module 2: Data Cleaning and Preparation with Pandas

Topics Covered:

- Introduction to Pandas and its uses
- Loading data from Excel, CSV and databases
- Understanding tables and different types of keys
- Types of joins and how table joins work
- Handling missing values and removing duplicate records
- Renaming and removing columns
- Correcting data types and fixing text errors
- Replacing incorrect values and handling outliers
- Creating new and calculated columns
- Working with dates: extracting day, month and year
- Filtering and sorting data

Learning Outcome:

Participants will be able to load data from different sources, join related tables, and clean and prepare raw data into an accurate and well-structured format ready for analysis.

Module 3: Exploratory Data Analysis and Insights

Topics Covered:

- Introduction to exploratory data analysis
- Understanding the different types of analytics
- Understanding and summarising datasets
- Applying statistical measures to understand data
- Grouping, aggregating and summarising data
- Creating pivot tables and cross tabulations
- Analysing trends over time
- Segmenting data into meaningful groups
- Finding relationships between variables
- Identifying patterns, outliers and unusual values
- Measuring performance using key metrics
- Turning findings into clear business insights

Learning Outcome:

Participants will be able to explore and analyse data from different angles, identify trends, patterns and relationships, and turn their findings into clear insights that support decision-making.

Module 4: Data Visualization with Python

Topics Covered:

- Role of data visualization in data analytics
- Selecting the right chart for different types of data
- Creating charts with Matplotlib
- Creating statistical charts with Seaborn
- Building interactive charts with Plotly
- Structuring and formatting charts
- Displaying multiple charts in one view
- Visualising trends, comparisons and relationships
- Exporting charts for reports and presentations

Learning Outcome:

Participants will be able to choose suitable charts and create clear, professional and interactive visualizations that communicate their analysis effectively.

Module 5: Dashboards, Reporting and Final Project

Topics Covered:

- Introduction to dashboards and their role in reporting
- Planning a dashboard layout
- Building an interactive dashboard with Streamlit
- Adding key performance indicators
- Adding filters and user controls
- Combining multiple charts into one dashboard
- Presenting data stories and insights
- Sharing dashboards and reports
- Final project: analysing a real dataset from start to finish
- Presenting findings and recommendations

Learning Outcome:

Participants will be able to build an interactive dashboard, present their analysis clearly, and complete a full data analytics project from raw data to final insights.

Bonus Module: AI-Assisted Data Analytics

Topics Covered:

- Using AI tools to support writing, checking and improving Python code
- Asking questions about data in plain English
- Creating charts and summaries using AI prompts
- Using AI to explain results and highlight key insights
- Connecting to live data using APIs and databases
- Introduction to machine learning and prediction models
- Building a simple prediction model with Python
- Forecasting future trends
- Generating reports from analysis with AI
- Running AI tools offline on a local computer

Learning Outcome:

Participants will be able to use AI tools to speed up their analysis, explore data through plain English questions, build a simple prediction model, and generate clear reports from their findings.

Practical Activities

Participants will work with real-world datasets throughout the course to apply the concepts learned. Activities will include writing Python code, cleaning and preparing data, analysing data, creating charts, building a dashboard and completing a final analytics project.

Who Should Attend?

- Anyone working with data and reports
- Professionals who want to go beyond Excel
- Office, finance, and administrative staff
- Business owners and team leaders
- IT staff and data enthusiasts
- Students and graduates seeking practical skills

Prerequisites

No prior programming experience is required. Basic computer skills and familiarity with Microsoft Excel will be helpful but are not essential.

Course Duration

- Duration: 5 Days – 9:00 AM to 4:30 PM
- Mode: Face-to-face / Instructor-led
- Includes hands-on practical sessions

Certification

Participants who successfully complete the course will be awarded a Certificate of Attainment.