samcommunity.in

✦ DATA SCIENCE & ANALYTICS · INTERMEDIATE

Python for Data Analysis

Analyse data with Python.





64	7	SAM-PYDATA
HOURS	MODULES	CERTIFICATION

SAMCOMMUNITY ACADEMY

academy@samcommunity.in

samcommunity.in

✦ INSIDE THIS BROCHURE

Contents

Program overview 03

Who it's for 04

Learning outcomes 05

Program runway 06

Detailed curriculum 07

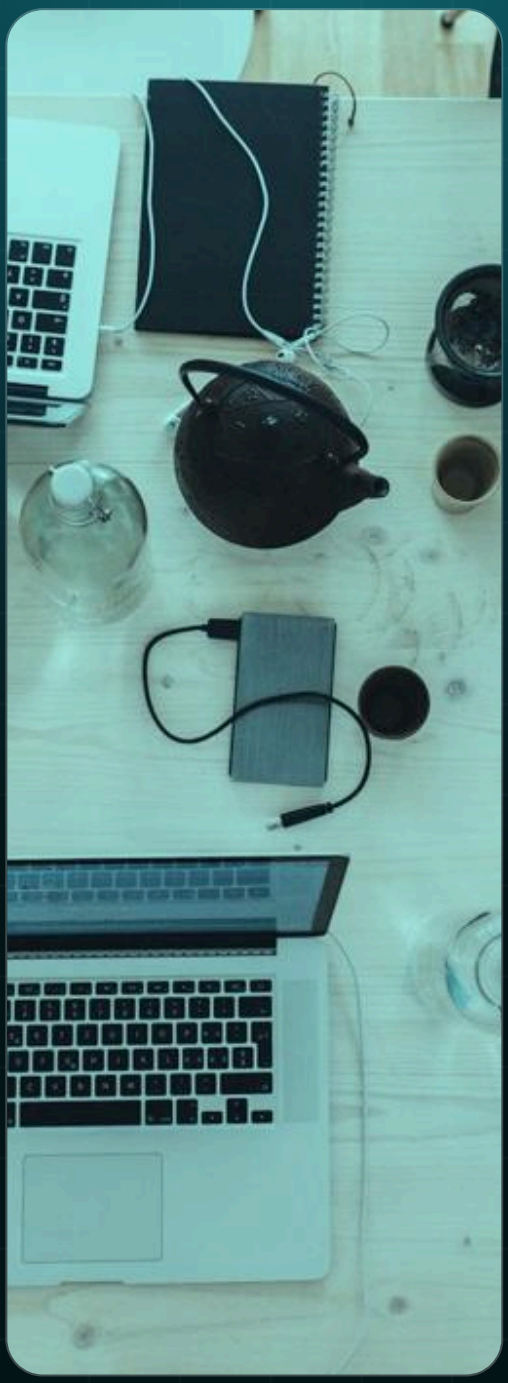
Tools & platforms 10

Projects & capstone 11

Certification & method 12

Learning path 13

FAQs 14



AT A GLANCE

Level	Intermediate
Duration	64 Hours
Modules	7
Certificate	SAM-PYDATA

✦ PROGRAM OVERVIEW

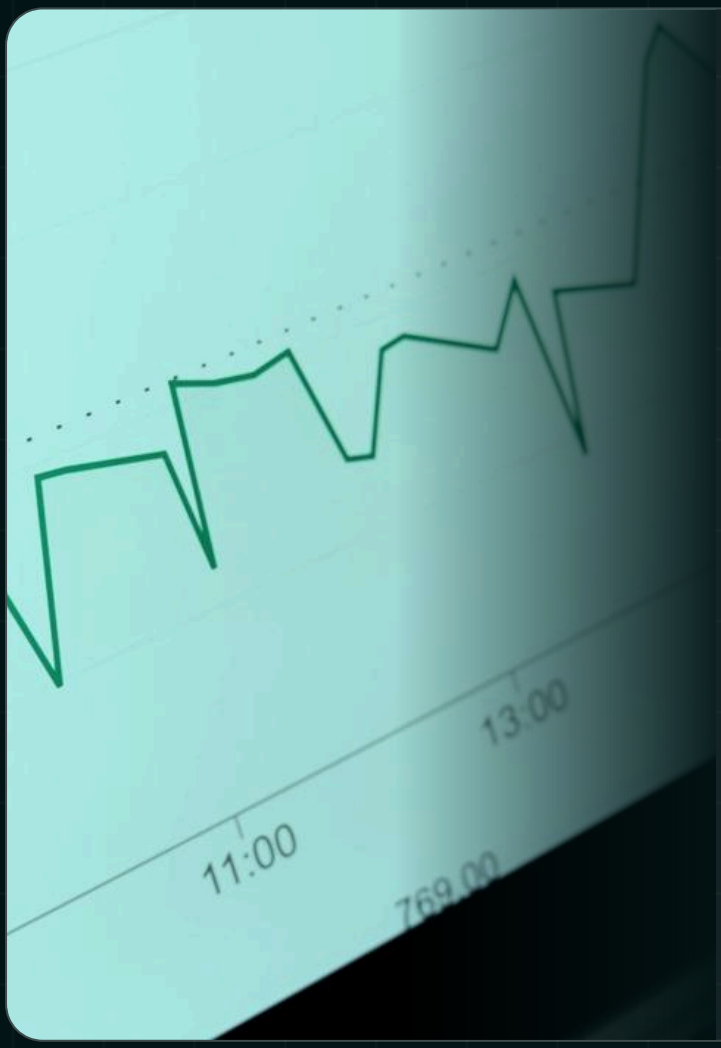
Analyse data with Python.



Load, clean, transform and analyse data with Pandas and NumPy, and visualise results.

Python has become the standard tool for analysts who outgrow spreadsheets and need repeatable, scalable analysis. This intermediate program teaches practical Python for data work: loading, cleaning and transforming datasets with Pandas, numerical computing with NumPy, and visualising and reporting results with Matplotlib, Seaborn and Plotly in Jupyter notebooks. Every concept is practised on realistic datasets.

LEVEL	DURATION	CERTIFICATION	DELIVERY
Intermediate	64 Hours	SAM-PYDATA	Instructor-led · Live virtual · Blended



✦ WHAT YOU'LL PRACTISE

Load and clean datasets	01
Transform data with Pandas	02
Compute with NumPy	03
Visualise and report findings	04

✦ WHO IT'S FOR

Built for people ready to grow.

01

Business professionals

Data literacy, Excel and SQL foundations

02

Analysts

Power BI, Tableau and Python for analysis

03

Data engineers

Pipelines with Spark, Kafka and Airflow

04

Data scientists & architects

ML, NLP, computer vision and platform design

PREREQUISITES

- Basic Python syntax or any programming exposure — 01
- Comfort with Excel or SQL — 02
- Basic statistics concepts — 03

ROLES YOU CAN TARGET

- Data Analyst ↗
- Python Data Analyst ↗
- Business Intelligence Analyst ↗
- Junior Data Scientist ↗
- Research Analyst ↗

✦ LEARNING OUTCOMES

What you'll be able to do.

01 Write clean Python code for data analysis tasks

02 Load data from CSV, Excel, SQL and APIs

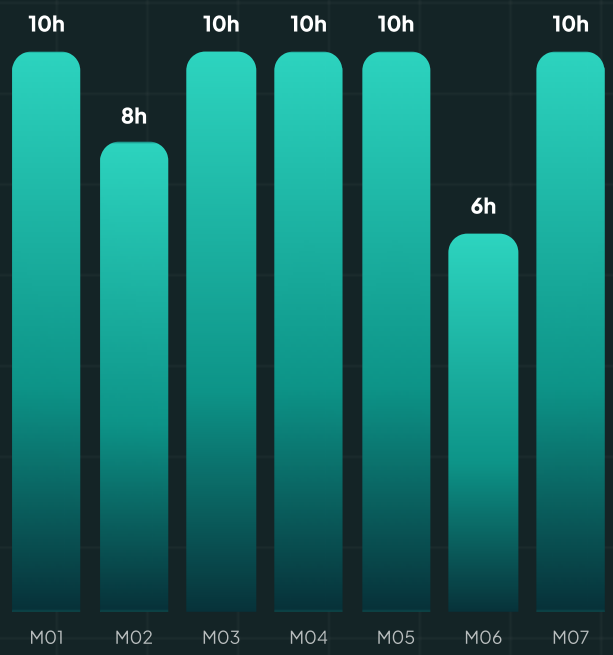
03 Clean, reshape and merge datasets using Pandas

04 Perform fast numerical computation with NumPy arrays

05 Analyse time series and grouped data effectively

06 Visualise findings and present them in clear reports

HOURS PER MODULE



✦ PROGRAM RUNWAY

Your journey, module by module.

7
MODULES · 64 HRS

01	**Python Essentials for Analysts** Jupyter notebooks and VS Code, Data types and structures, Control flow and functions	10 hrs
02	**NumPy for Numerical Computing** ndarrays and dtypes, Indexing, slicing and boolean masks, Vectorised operations	8 hrs
03	**Pandas Fundamentals** Series and DataFrames, Reading CSV, Excel and SQL, Selecting with loc and iloc	10 hrs
04	**Data Cleaning and Wrangling** Handling missing values, Duplicates and outliers, String methods and regex	10 hrs
05	**Grouping, Merging and Reshaping** groupby and aggregation, Merge, join and concatenate, Pivot tables and crosstabs	10 hrs
06	**Time Series Analysis** Datetime parsing and indexes, Resampling and frequency, Rolling and expanding windows	6 hrs
07	**Visualisation and Reporting** Matplotlib fundamentals, Seaborn statistical plots, Interactive charts with Plotly	10 hrs
★	**Capstone · End-to-End Data Analysis Project** Assessment, capstone review and certification	

✦ DETAILED CURRICULUM

The syllabus.

Modules 01–03

MODULE 01

Python Essentials for Analysts

10 hours

Hands-on lab
Write reusable Python functions to process a small sales dataset.

TOPICS COVERED

- Jupyter notebooks and VS Code
- Data types and structures
- Control flow and functions
- List and dict comprehensions
- Modules and virtual environments
- Error handling

Python · Jupyter

MODULE 02

NumPy for Numerical Computing

8 hours

Hands-on lab
Compute statistics and simulations on large arrays using vectorised NumPy.

TOPICS COVERED

- ndarrays and dtypes
- Indexing, slicing and boolean masks
- Vectorised operations
- Broadcasting rules
- Aggregations and statistics
- Random sampling

NumPy

MODULE 03

Pandas Fundamentals

10 hours

Hands-on lab
Load and explore a retail dataset, answering initial business questions.

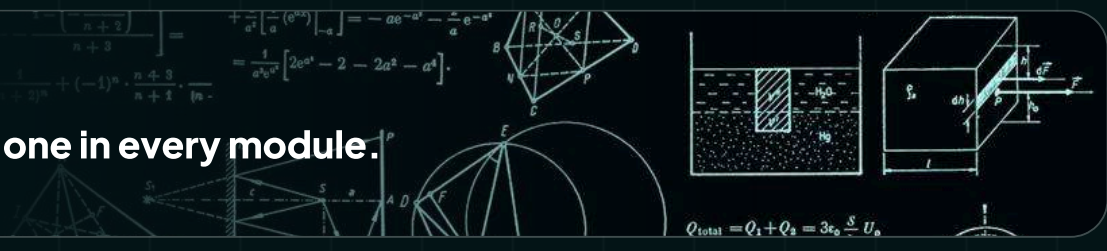
TOPICS COVERED

- Series and DataFrames
- Reading CSV, Excel and SQL
- Selecting with loc and iloc
- Filtering and sorting
- Adding and transforming columns
- Exploratory summaries

pandas

LEARN BY DOING

7 guided labs, one in every module.



✦ DETAILED CURRICULUM

Syllabus, continued.

Modules 04–05

MODULE 04

Data Cleaning and Wrangling

10 hours

Hands-on lab
Clean a messy customer and orders dataset into an analysis-ready form.

TOPICS COVERED

- Handling missing values
- Duplicates and outliers
- String methods and regex
- Data type conversion
- Categorical data
- Method chaining

MODULE 05

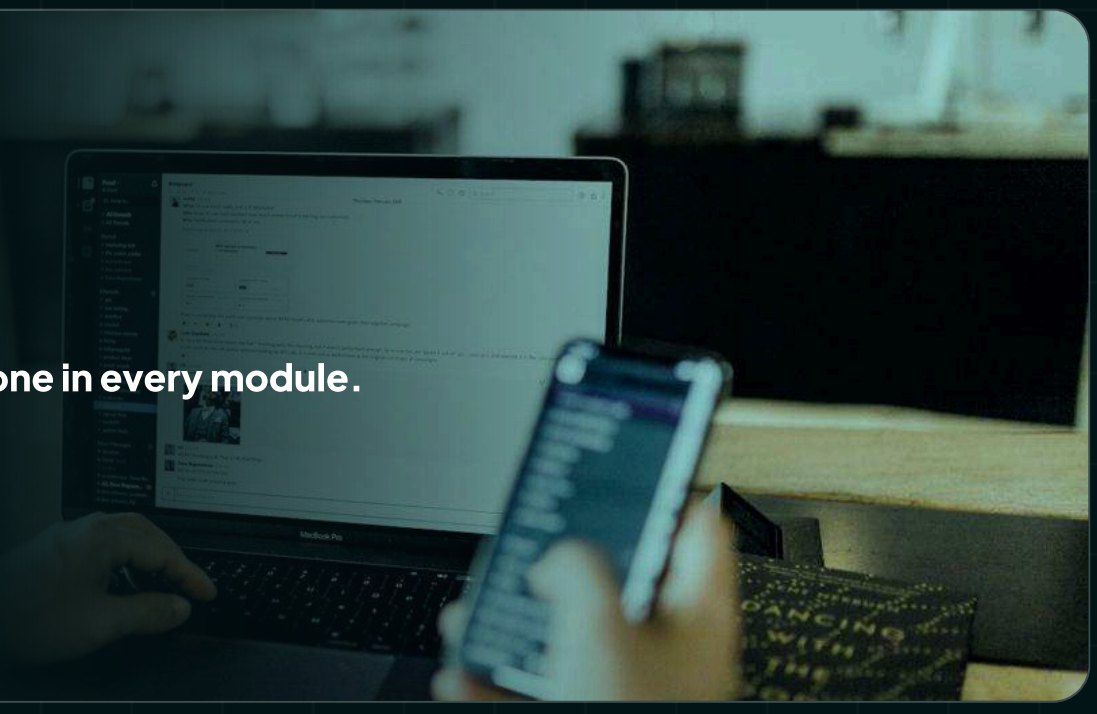
Grouping, Merging and Reshaping

10 hours

Hands-on lab
Combine orders, products and customers to build category performance tables.

TOPICS COVERED

- groupby and aggregation
- Merge, join and concatenate
- Pivot tables and crosstabs
- melt and stack
- Window and rolling operations



LEARN BY DOING

7 guided labs, one in every module.

✦ DETAILED CURRICULUM

Syllabus, continued.

Modules 06–07

MODULE 06

Time Series Analysis

6 hours

Hands-on lab
Analyse daily sales trends with resampling and rolling averages.

TOPICS COVERED

- Datetime parsing and indexes
- Resampling and frequency
- Rolling and expanding windows
- Shifts and percentage change
- Seasonality basics

MODULE 07

Visualisation and Reporting

10 hours

Hands-on lab
Create a visual analysis notebook summarising sales performance and trends.

TOPICS COVERED

- Matplotlib fundamentals
- Seaborn statistical plots
- Interactive charts with Plotly
- Choosing the right chart
- Exporting reports and notebooks
- Introduction to Polars and DuckDB



CAPSTONE

End-to-End Data Analysis Project

✦ YOUR STACK

Tools you'll build with.

Real platforms and frameworks — the same stack modern teams ship with, practised in cloud-hosted labs.

Python
Automation & scripting

pandas
Data wrangling

NumPy
Numerical computing

Jupyter
Notebooks & experiments



LAB ACCESS

24×7 cloud labs for the length of the program

✦ HANDS-ON WORK

Projects that prove you can do it.

01

E-Commerce Sales Analysis

Clean and analyse order data to uncover top products, customer segments and seasonal trends with clear visualisations.

02

Public Dataset Exploration

Load an open government or public dataset, wrangle it and report three evidence-backed insights with charts.

03

Automated Weekly Report

Build a Python script that ingests new data files, computes KPIs and exports a formatted summary report.

CAPSTONE PROJECT

End-to-End Data Analysis Project

Choose a realistic business dataset, define questions, clean and transform the data with Pandas, analyse it using grouping and time-series methods, and present findings in a well-documented notebook and short stakeholder presentation.

Real-world scenario | Mentor review | Portfolio ready



CERTIFICATION

SAM-PYDATA

Awarded on successful completion of the program assessments.

- MCQ assessments
- Practical lab evaluation
- Project & capstone review
- Final presentation



✦ HOW YOU LEARN

The SAM Learning Framework™

PHASE 01

S

Scenario

Real-world attack and use-case scenarios open every module.

PHASE 02

A

Apply

Hands-on lab work, CTF challenges and live projects.

PHASE 03

M

Master

Assessment, peer review and certification prep.

PHASE 04

M

Mentor

Post-program career guidance and support.

DELIVERY MODELS

- Instructor-Led (ILT)
- Virtual Instructor-Led
- Self-Paced Online
- E-Learning Licensing
- Blended Learning
- Corporate Onsite
- Bootcamp Intensive
- Hackathon / CTF
- Mentorship

✦ LEARNING PATH · DATA SCIENCE & ANALYTICS

Where this program fits.

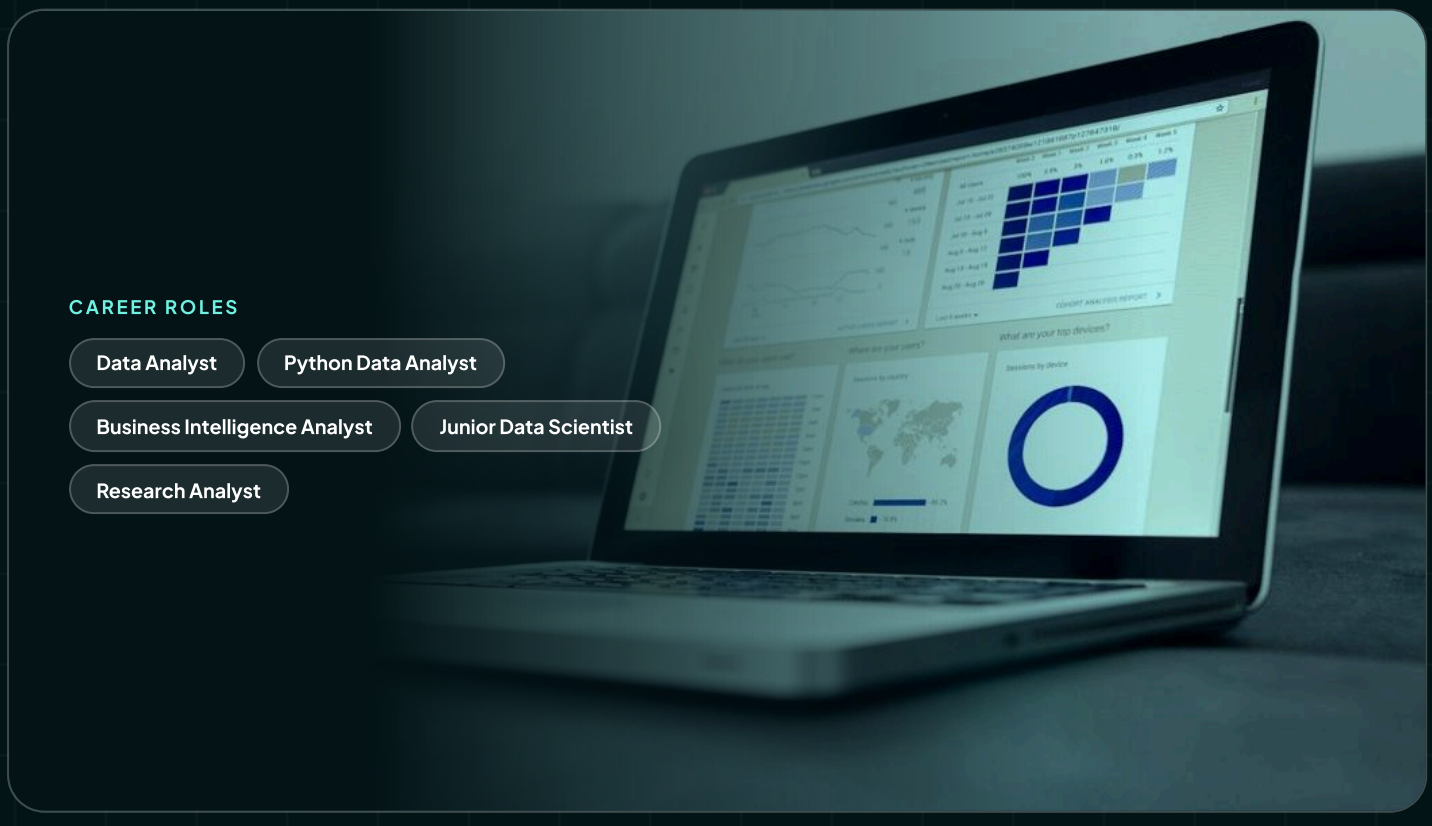
Beginner	Intermediate	Advanced	Expert
3 programs	You are here	4 programs	2 programs

BEFORE THIS

Data Literacy for Business Professionals	16 Hours
Excel for Data Analysis	24 Hours
SQL for Data Analysts	40 Hours

UP NEXT

Advanced Data Engineering (Spark/Kafka/Airflow)	96 Hours
Machine Learning for Data Scientists	80 Hours
NLP for Data Scientists	64 Hours
Computer Vision	64 Hours



CAREER ROLES

- Data Analyst
- Python Data Analyst
- Business Intelligence Analyst
- Junior Data Scientist
- Research Analyst

✦ FAQS

Questions, answered.

Q01

Do I need prior experience?

Basic Python syntax or exposure to any programming language helps, and a short Python refresher is included at the start. Comfort with Excel or SQL and basic statistics will help you get the most from the analysis modules.

Q02

How are classes scheduled and delivered?

Sessions are instructor-led and run as live virtual or blended batches, with weekday and weekend options where available. Sessions use live coding in Jupyter notebooks, with exercises and solution notebooks shared afterwards.

Q03

Will I receive a certificate?

Yes. Learners who complete the required labs, projects and final assessment receive the Samcommunity Academy SAM-PYDATA certificate. It recognises the practical skills you demonstrated during the program rather than attendance alone.

Q04

How do I access labs and tools?

You install Python through Anaconda or a similar distribution with Jupyter, or use Google Colab in the browser. Sample datasets and starter notebooks are provided, with installation help in the first session.

Q05

Is career support included?

You get guidance on portfolio projects, resume positioning and interview preparation for relevant roles. Your project notebooks can be published on GitHub as portfolio evidence. We do not guarantee jobs, placements or salaries.



✦ LET'S TALK

Start Python for Data Analysis with Samcommunity.

INDIVIDUALS

academy@samcommunity.in

Batches, enrolment & career guidance

CORPORATE & INSTITUTIONS

corporate@samcommunity.in

Team batches & custom programs

Xylyn Samcommunity Private Limited · DPIIT-recognized startup · Surat, Gujarat, India