

Detailed Syllabus

Session-by-session topic breakdown for the AI-Powered Data Analyst Programme – every day of all thirteen weeks, mapped to what you will actually learn.

65

sessions total

13

weeks

7

phases

1.5 hrs

per session

HOW TO READ THIS DOCUMENT

Day by day

Each session below is numbered D01 through D65 and grouped by week within its phase, matching the roadmap in the programme brochure.

PHASES COVERED

Foundations, Statistics, SQL, Python, Power BI and Dashboards, AI-Assisted Analytics, and the Capstone Project.

PHASE 01 Foundations

WEEK 1

WEEK 1

D01 Programme orientation & the analyst's workflow —How data moves from a question to a decision; the toolchain this programme covers

D02 Excel refresher —Formulas, cell referencing, VLOOKUP and XLOOKUP, data types

D03 Pivot tables —Building summaries, grouping, calculated fields

D04 Power Query —Importing, cleaning and transforming data without formulas

D05 Basic Excel dashboard —Conditional formatting, chart basics, Week 1 exercise

PHASE 02 Statistics for Analysts

WEEKS 2-3

WEEK 2

D06 Descriptive statistics —Mean, median, mode, variance, standard deviation

D07 Data distributions —Normal distribution, skewness, identifying outliers

D08 Probability basics —Core rules, conditional probability, business applications

D09 Correlation vs causation —Correlation coefficient, common pitfalls, Simpson's paradox

D10 Sampling & estimation —Central Limit Theorem intro, confidence intervals

WEEK 3

D11 Hypothesis testing fundamentals —Null vs alternative hypotheses, p-values, significance

D12 Comparing groups —t-tests for two-sample comparisons

D13 Categorical data testing —Chi-square tests

D14 A/B testing for business decisions —Designing and reading an A/B test

D15 Milestone project: Survey Insights Report —Apply hypothesis testing to a real survey dataset

PHASE 03 SQL, in Depth

WEEKS 4-6

WEEK 4

D16 **Relational databases & SELECT basics** —SELECT, WHERE, ORDER BY, filtering fundamentals

D17 **Aggregation** —GROUP BY, HAVING, aggregate functions

D18 **Joins I** —INNER JOIN, LEFT JOIN

D19 **Joins II** —RIGHT/FULL joins, self-joins, multi-table joins

D20 **Subqueries** —Nested queries, correlated subqueries

WEEK 5

D21 **Common Table Expressions** —Writing readable, reusable CTEs

D22 **Window functions I** —ROW_NUMBER, RANK, PARTITION BY

D23 **Window functions II** —Running totals, moving averages

D24 **Cleaning data in SQL** —CASE statements, string functions, handling NULLs

D25 **Query performance** —Indexing basics, writing efficient queries

WEEK 6

D26 **Advanced query patterns** —Combining CTEs, subqueries and window functions

D27 **Dates & time-series in SQL** —Date functions, period-over-period comparisons

D28 **Reading a schema** —Normalisation, keys and relationships, enough to work with any database

D29 **SQL practice** —Solving open-ended business questions against a multi-table database

D30 **Milestone project: Sales Database Query Project** —End-to-end SQL project against a retail database

PHASE 04 Python for Analysis

WEEKS 7-9

WEEK 7

D31 **Python fundamentals for analysts** —Variables, data types, control flow

D32 **Introduction to pandas** —Series, DataFrames, reading data into Python

D33 **Selecting & filtering data** —Indexing, boolean masks

D34 **Cleaning data in pandas** —Missing values, duplicates, data type conversion

D35 **Grouping & aggregation** —groupby, pivot tables in pandas

WEEK 8

D36 **Merging & joining datasets** —Combining multiple pandas DataFrames

D37 **Reshaping data** —melt, pivot, stack and unstack

D38 **Exploratory Data Analysis** —Summary statistics, distribution checks

D39 **Data visualisation in Python** —matplotlib and seaborn basics

D40 **Dates & time-series in pandas** —Working with date ranges and time-indexed data

WEEK 9

D41 **Writing reusable functions** —Turning repeated analysis steps into functions and scripts

D42 **Automating a recurring report** —End-to-end scripted workflow

D43 **Combining SQL and Python** —Querying a database directly from a Python workflow

D44 **Case practice** —Solving a full business analysis case in Python

D45 **Milestone project: Data Cleaning and Complete EDA Project (Python)** —Raw file to a complete exploratory data analysis using Python and pandas

PHASE 05 Power BI and Dashboards

WEEKS 10-11

WEEK 10

D46 **Power BI interface & data sources** —Connecting to files, databases and other sources

D47 **Power Query in Power BI** —Data transformation before it hits the model

D48 **Data modelling** —Relationships, star schema basics

D49 **Introduction to DAX** —Calculated columns vs measures

D50 **Core DAX functions** —SUM, CALCULATE, filter context basics

PHASE 05 Power BI and Dashboards

WEEKS 10-11

WEEK 11

- D51 **DAX time intelligence** —Year-to-date, month-to-date, period comparisons
- D52 **Dashboard design principles** —Layout, chart choice, avoiding clutter
- D53 **Interactive visuals** —Slicers, filters, drill-through
- D54 **Publishing & sharing** —Power BI Service, workspaces, refresh schedules
- D55 **Milestone project: Interactive Sales Dashboard** —A published, stakeholder-ready dashboard

PHASE 06 AI-Assisted Analytics & Communication

WEEK 12

WEEK 12

- D56 **AI copilots for SQL** —Generating and debugging queries faster
- D57 **AI copilots for Python** —Accelerating cleaning and scripting work
- D58 **AI-assisted insight drafting** —Turning analysis output into a first-pass narrative
- D59 **Data storytelling** —Presenting findings to a non-technical audience
- D60 **Milestone project: AI-Assisted Insight Report** —AI-drafted analysis rebuilt into a stakeholder recommendation

PHASE 07 Capstone Project

WEEK 13

WEEK 13

- D61 **Capstone kickoff** —Choosing a track and planning the approach
- D62 **Work session: data cleaning** —SQL and Python cleaning on the chosen dataset
- D63 **Work session: analysis & dashboard build** —Power BI dashboard construction
- D64 **Work session: refinement** —Polishing the dashboard and drafting the recommendation
- D65 **Final presentations** —Presenting the completed capstone; programme wrap-up