BLACKBIRD FOR TRAINING

Advanced Data Analytics for Accountants and Auditors Course

18 – 22 January 2027
Cape Town (South Africa)



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Ref: 40_361990 **Date:** 18 – 22 January 2027 **Location:** Cape Town (South Africa) **Fees:** 4200 GBP

Introduction:

Advanced data analytics for accountants is the use of data models, query languages, scripting and statistical tests to answer finance and audit questions across whole populations of transactions rather than samples. This 1-week course is for experienced accountants, financial analysts, management accountants, auditors and controllers already confident in Excel and Power Query, and its final deliverable is an audit and forecasting analytics pack built on a Power BI data model. It is taught at an intermediate to advanced, practitioner level through case studies on finance datasets, using Power BI with DAX Data Analysis Expressions, SQL and Python.

Course Objectives:

- Distinguish flat-file analysis from star-schema data models and apply DAX measures and time intelligence to finance reporting in Power BI
- Apply SQL queries and Python pandas scripts to extract, join and test general ledger, payables and receivables data at full-population scale
- Compare trend, regression and time-series forecasting methods and select the one that fits a revenue, cost or cash-flow question
- Interpret Benford's law, duplicate, gap and journal entry test results to justify which transactions need fraud or audit follow-up
- Apply process mining to procure-to-pay and order-to-cash event logs to identify control bypasses, rework and delays
- Justify reporting automation, data governance and control choices that keep analytics outputs reliable and reviewable

Target Audience:

- Experienced accountants who own month-end reporting and analysis, deciding which reports to rebuild on a governed data model
- Financial and management analysts who prepare forecasts and performance reviews, choosing which forecasting method and drivers to trust
- Internal and external auditors who plan and perform substantive and controls testing, judging which full-population tests can replace sampling
- Professionals who oversee procure-to-pay and order-to-cash processes, deciding which process deviations call for control changes
- Finance reporting and systems professionals who maintain data pipelines, judging which reports to automate and which controls to embed



Course Outline:

Day 1: Advanced Finance Analytics Landscape: From Sampling to Full-Population Evidence

- Descriptive vs Predictive vs Prescriptive Analytics: Where Finance and Audit Questions Sit
- Sampling vs Full-Population Testing: Evidence Strength, Coverage and Practical Limits
- Finance Data Architecture: ERP Tables, Subledgers, Data Warehouses and Extract Layers
- Analytics Maturity Assessment: Scoring a Finance Function's Data, Tools and Skills
- Case Dataset Briefing: Ledger, Payables, Receivables and Event Logs Reviewed

Day 2: Data Models, DAX, SQL and Python for Finance Data

- Star Schema vs Flat Tables: Designing Fact and Dimension Tables for Finance
- DAX Measures and Time Intelligence: Year-to-Date, Prior Period and Rolling Totals
- SQL SELECT, JOIN and GROUP BY: Querying General Ledger and Subledger Tables
- Python Pandas for Accountants: Loading, Joining and Summarising Large Transaction Files
- Calculated Columns vs Measures: Choosing the Right DAX Approach for Performance

Day 3: Predictive Analytics and Forecasting for Finance Decisions

- Moving Averages vs Exponential Smoothing: Short-Term Revenue and Cost Forecasting
- Linear Regression for Finance: Testing Cost Drivers and Revenue Relationships
- Seasonality and Trend Decomposition: Reading Monthly Sales and Expense Patterns
- Rolling Cash-Flow Forecast Model: Driver-Based Projections in Power BI and Python
- Forecast Accuracy Metrics: MAPE, Bias and Back-Testing Against Actual Results

Day 4: Fraud and Audit Analytics, Process Mining, Governance and Controls

- Benford's Law First-Digit Testing: Spotting Manipulated Amounts in Expense Populations
- Journal Entry Testing: Gaps, Duplicates, Unusual Users and After-Hours Postings
- Procure-to-Pay vs Order-to-Cash Process Mining: Event Logs, Variants and Bottlenecks
- Reporting Automation: Scheduled Refresh, Parameterised Queries and Python Scripts
- Data Governance and Analytics Controls: Lineage, Access Rights and Change Logs

Day 5: Case Study: Building an Audit and Forecasting Analytics Pack

- Case Data Model Build: Applying Star Schema and DAX to the Case Ledger
- Case Fraud Tests: Applying Benford, Duplicate and Journal Entry Analyses
- Case Forecast and Process Findings: Applying Regression and Process Mining Results
- Exception Findings vs Control Recommendations: Defending Results to a Review Panel
- Audit and Forecasting Analytics Pack: Final Assembly, Documentation and Handover



Skills You Will Gain:

- Star Schema Data Modelling
- DAX Time Intelligence
- SQL Querying of Ledger Data
- Python Pandas Analysis
- Time-Series Forecasting
- Benford's Law Analysis
- Journal Entry Testing
- Process Mining

Why Attend This Course:

- From analysing flat spreadsheets one report at a time to reusing a governed Power BI data model with DAX measures across finance reports
- From testing small samples to running full-population SQL, Python and Benford's law tests on every transaction
- From forecasts built on last year plus a percentage to driver-based forecasts checked against MAPE and bias
- From findings scattered across files to an audit and forecasting analytics pack that reviewers can trace and repeat

Conclusion:

At this level, analytics for accountants means building reusable models and repeatable tests that turn complete transaction populations into evidence for forecasts, audits and control decisions. The course makes three distinctions clear: flat tables versus star-schema models, sample-based versus full-population testing, and statistical red flags versus confirmed exceptions. It suits accountants, analysts and auditors who already clean and summarise data confidently in Excel and Power Query, typically after foundation-level data analytics training, and who now need intermediate to advanced methods with DAX, SQL, Python, forecasting and process mining.

Frequently Asked Questions FAQ:

What do delegates need before an advanced data analytics for accountants course?

Delegates need confident Excel skills, including Power Query cleaning, PivotTables and basic Power BI visuals, plus working knowledge of ledgers, reconciliations and financial ratios. No prior SQL or Python experience is required; both are introduced through finance examples, but the pace assumes earlier analytics practice.



How does advanced data analytics for accountants differ from a foundation-level analytics course?

It starts where foundation courses stop. Instead of cleaning data and building PivotTables, delegates design star-schema models, write DAX, SQL and Python, forecast with statistical methods, and run fraud tests and process mining on full populations. General data science courses, by contrast, rarely use ledger or audit data.

Does Benford's law prove fraud in advanced data analytics for accountants?

No. Benford's law flags populations whose leading digits depart from the expected pattern, which can point to manipulation, but also to legitimate causes such as price lists or thresholds. Flagged items are red flags for follow-up testing and evidence gathering, not proof of fraud on their own.

What do delegates take back to work from advanced data analytics for accountants training?

Delegates take back an audit and forecasting analytics pack: a Power BI star-schema model with DAX measures, SQL and Python test scripts, Benford and journal entry results, a driver-based forecast and process mining findings, all documented so the work can be refreshed and reviewed.

