

PROFESSIONAL TRAINING PROGRAM

Data Analytics Course Curriculum

A Comprehensive 4-Month Program — From Foundations to Capstone Project

DURATION	FORMAT	LEVEL	CERTIFICATION
16 Weeks / 4 Months	Instructor-Led + Hands-On Labs	Beginner → Job-Ready	Capstone-Based

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16

WEEKS TOTAL

4

CORE MODULES

12+

HANDS-ON PROJECTS

1

CAPSTONE PROJECT

1. Program Overview

This curriculum is designed to take a learner with little to no prior background in analytics and develop them into a job-ready **Data Analyst** over the course of **16 weeks (4 months)**. The program blends conceptual instruction, guided labs, tool-based practice, and real-world datasets, culminating in a portfolio-ready capstone project.

Program Philosophy

Each month builds directly on the last: **Month 1** establishes statistical and analytical thinking; **Month 2** builds technical querying and scripting skills (SQL & Python); **Month 3** focuses on turning data into insight through visualization and applied statistics; **Month 4** introduces predictive analytics and consolidates everything into a capstone project that mirrors a real workplace assignment.

2. Learning Objectives

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

- Apply core statistical concepts (descriptive statistics, probability, distributions, hypothesis testing) to real datasets
- Write intermediate-to-advanced SQL queries to extract, join, and aggregate data from relational databases
- Clean, transform, and analyze data using Excel and Python (Pandas, NumPy)
- Build interactive dashboards and reports using Power BI and/or Tableau
- Design and interpret A/B tests and basic regression models
- Apply foundational machine learning concepts (classification, clustering, regression) to business problems
- Communicate data-driven insights clearly to technical and non-technical stakeholders
- Independently plan, execute, and present a full analytics project from raw data to recommendation

3. Tools & Software Required

Microsoft Excel

SQL (MySQL / PostgreSQL)

Python 3.x

Jupyter Notebook

Pandas / NumPy

Matplotlib / Seaborn

Power BI

Tableau Public

Google Sheets

GitHub

Scikit-learn

Statistics Add-in (Excel)

CATEGORY	DETAILS
Weekly Time Commitment	10–12 hours (4 hrs instructor-led sessions + 6–8 hrs practice/labs/assignments)
Class Structure	2 live sessions/week (90 min each) + 1 lab/workshop session (2 hrs) + self-paced exercises
Cohort Size	Recommended 15–25 participants per batch for optimal mentorship
Prerequisites	Basic computer literacy and comfort with Excel; no coding experience required

4. Month 1 — Foundations of Data Analytics

Goal: Build a strong base in analytical thinking, statistics, and spreadsheet-level data handling.

Week 1

Introduction to Data Analytics & the Analyst Mindset

TOPIC	DETAILS
Core Concepts	What is data analytics; types of analytics (descriptive, diagnostic, predictive, prescriptive); the analytics lifecycle; role of a data analyst in an organization
Hands-On Lab	Explore a sample business dataset; identify data types, sources, and quality issues
Deliverable	1-page write-up: "What business questions could this dataset answer?"

Week 2

Statistics Foundations I

TOPIC	DETAILS
Core Concepts	Descriptive statistics: mean, median, mode, variance, standard deviation; measures of spread; data distributions (normal, skewed)
Hands-On Lab	Compute descriptive statistics in Excel using formulas and the Data Analysis Toolpak
Deliverable	Statistical summary report on a retail sales dataset

Week 3

Statistics Foundations II & Probability

TOPIC	DETAILS
Core Concepts	Probability basics, conditional probability, correlation vs. causation, intro to hypothesis testing
Hands-On Lab	Correlation analysis between marketing spend and sales using Excel
Deliverable	Mini case study: interpreting correlation results for a stakeholder

Week 4

Advanced Excel for Analysts

TOPIC	DETAILS
Core Concepts	PivotTables & PivotCharts, VLOOKUP/XLOOKUP, INDEX-MATCH, conditional formatting, data cleaning techniques
Hands-On Lab	Build a PivotTable-based sales dashboard from raw transactional data
Deliverable	Month 1 Mini-Project: Clean and analyze a messy dataset, produce a 1-page Excel dashboard with key insights

Month 1 Assessment Checkpoint

Written quiz on statistics concepts (20%) + Excel dashboard mini-project (80%). Passing threshold: 70%.

5. Month 2 — SQL, Databases & Python for Analytics

Goal: Gain technical fluency to extract and manipulate data directly from databases and through code.

Week 5

SQL Fundamentals

Topic	Details
Core Concepts	Relational database concepts, SELECT, WHERE, ORDER BY, GROUP BY, aggregate functions (SUM, AVG, COUNT)
Hands-On Lab	Query a sample e-commerce database to answer business questions
Deliverable	10 SQL query exercises with written result interpretation

Week 6

Intermediate SQL

Topic	Details
Core Concepts	JOINS (INNER, LEFT, RIGHT, FULL), subqueries, CTEs (WITH clauses), window functions basics
Hands-On Lab	Multi-table joins across customers, orders, and products tables
Deliverable	SQL case study: customer segmentation query set

Week 7

Introduction to Python for Data Analysis

Topic	Details
Core Concepts	Python basics (variables, data types, loops, functions); intro to Jupyter Notebook; Pandas basics (DataFrames, Series)
Hands-On Lab	Load, inspect, and filter a CSV dataset using Pandas
Deliverable	Python notebook: data exploration exercise

Week 8

Data Cleaning & Wrangling with Python

Topic	Details
Core Concepts	Handling missing data, duplicates, data type conversion, merging/joining DataFrames, groupby operations
Hands-On Lab	Clean a real-world messy dataset (e.g., survey or transactional data) end-to-end
Deliverable	Month 2 Mini-Project: SQL + Python combined project — extract data via SQL, clean and analyze in Python, summarize findings

Month 2 Assessment Checkpoint

SQL practical exam (40%) + Python data-cleaning project (60%). Passing threshold: 70%.

6. Month 3 — Data Visualization & Statistical Analysis

Goal: Translate cleaned data into compelling visual stories and apply deeper statistical techniques.

Week 9

Data Visualization Principles & Python Plotting

Topic	Details
Core Concepts	Chart selection principles, visual best practices, Matplotlib & Seaborn fundamentals
Hands-On Lab	Build line, bar, box, and scatter plots to explore a dataset's trends and outliers
Deliverable	Visual exploration notebook with 5+ chart types and written insights

Week 10

Power BI for Dashboards

Topic	Details
Core Concepts	Power BI interface, data import & transformation (Power Query), DAX basics, building visuals
Hands-On Lab	Build an interactive sales performance dashboard with slicers and filters
Deliverable	Power BI dashboard: regional sales performance

Week 11

Tableau & Advanced Visualization

Topic	Details
Core Concepts	Tableau interface, calculated fields, dashboard design, storytelling with data
Hands-On Lab	Recreate the Power BI dashboard in Tableau; compare tool strengths
Deliverable	Tableau Public dashboard published online

Week 12

Applied Statistics: Hypothesis Testing & A/B Testing

Topic	Details
Core Concepts	Hypothesis testing (t-tests, chi-square), p-values, confidence intervals, A/B test design and interpretation
Hands-On Lab	Design and analyze an A/B test on sample marketing campaign data using Python (SciPy)
Deliverable	Month 3 Mini-Project: End-to-end dashboard + statistical test report for a business scenario

Month 3 Assessment Checkpoint

Dashboard project (Power BI or Tableau) (50%) + A/B testing case study (50%). Passing threshold: 70%.

7. Month 4 — Advanced Analytics, ML Introduction & Capstone

Goal: Introduce predictive analytics and integrate all prior skills into one professional capstone project.

Week 13

Regression & Predictive Analytics Basics

TOPIC	DETAILS
Core Concepts	Simple & multiple linear regression, model evaluation (R^2 , RMSE), intro to Scikit-learn
Hands-On Lab	Build a regression model to predict sales or pricing from historical data
Deliverable	Regression notebook with model interpretation write-up

Week 14

Introduction to Machine Learning for Analysts

TOPIC	DETAILS
Core Concepts	Classification (logistic regression, decision trees) vs. clustering (k-means); when analysts use ML vs. traditional analysis
Hands-On Lab	Build a customer segmentation model using k-means clustering
Deliverable	Clustering notebook with business recommendations

Week 15

Capstone Project Kickoff & Workshopping

TOPIC	DETAILS
Core Concepts	Capstone dataset selection, project scoping, storytelling & presentation design, stakeholder communication
Hands-On Lab	1:1 mentor check-ins; build project plan and initial data exploration
Deliverable	Capstone proposal document (problem statement, dataset, planned approach)

Week 16

Capstone Completion & Final Presentations

TOPIC	DETAILS
Core Concepts	Final polish on analysis, dashboard, and presentation; peer review; mock stakeholder Q&A
Hands-On Lab	Final capstone presentations to instructors/panel (15 min per participant)
Deliverable	Final Capstone Project — full analysis, dashboard, and presentation deck

Month 4 Assessment Checkpoint

Regression/ML notebooks (30%) + Capstone project & presentation (70%). Passing threshold: 75%.

8. Assessment & Grading Structure

Component	Weight	Description
Weekly Assignments & Labs	25%	Hands-on exercises submitted after each session
Monthly Mini-Projects	35%	One applied project at the end of each month (4 total)
Quizzes & Practical Exams	15%	Short checks on statistics, SQL, and Python concepts
Capstone Project	20%	Final end-to-end project completed in Month 4
Participation & Peer Review	5%	Engagement in live sessions and peer feedback exercises

Grading Scale

90–100%: Distinction | 80–89%: Merit | 70–79%: Pass | Below 70%: Needs Improvement / Retake Module

Attendance Policy

Minimum 80% attendance in live sessions required for capstone eligibility and certification.

9. Capstone Project Guidelines

The capstone project is the culminating deliverable of the program and should demonstrate mastery of the full analytics workflow.

- Problem Definition:** Choose a real or simulated business problem (e.g., churn analysis, sales forecasting, marketing ROI)
- Data Collection & Cleaning:** Source a dataset (public dataset, company data, or simulated data) and clean it using Excel/Python
- Exploratory Analysis:** Use SQL and Python to explore trends, patterns, and relationships
- Visualization:** Build an interactive dashboard (Power BI or Tableau)
- Statistical/Predictive Layer:** Apply at least one statistical test or predictive model
- Presentation:** Deliver a 15-minute presentation with clear business recommendations to a review panel

10. Career Outcomes & Next Steps

Graduates of this program will be equipped for entry-level roles including:

- Data Analyst
- Business Analyst
- Reporting Analyst
- Junior BI Developer
- Marketing Analyst
- Operations Analyst

Recommended Next Steps After Graduation

- Publish the capstone project and dashboards on GitHub / Tableau Public as a portfolio piece
- Pursue advanced specialization tracks: Advanced Machine Learning, Data Engineering, or Business Intelligence
- Pursue relevant certifications (e.g., Microsoft PL-300, Tableau Desktop Specialist) to strengthen credentials