LANDMARK CAREER LAB

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DATA ANALYTICS

TRAINING PROGRAM

Comprehensive Syllabus

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Section 1: Roles in the Data Industry

The data ecosystem offers a wide range of career paths. Below is a snapshot of the most prominent roles, what they do, and where they fit in an organization's data strategy.

Role	Key Responsibilities
Database Administrator (DBA)	Manages, secures, and optimizes databases; ensures data availability, backup, and recovery; handles performance tuning and access control.
Data Analyst	Collects, cleans, and interprets data to generate actionable insights; builds dashboards and reports; supports business decision-making with data-driven recommendations.
Data Engineer	Designs and builds scalable data pipelines and ETL processes; manages data warehouses and lakes; ensures data quality and availability for analytics teams.
Data Scientist	Applies statistical modeling, machine learning, and advanced analytics to solve complex problems; builds predictive models and communicates findings to stakeholders.
Business Intelligence (BI) Analyst	Develops BI dashboards and reporting solutions; translates business requirements into data visualizations; monitors KPIs and business performance metrics.
Machine Learning Engineer	Deploys and scales ML models into production; optimizes model performance; bridges the gap between data science research and engineering systems.
Data Architect	Designs the overall data infrastructure and framework; defines data standards, policies, and integration strategies across the organization.
Analytics Engineer	Bridges data engineering and analytics; builds and maintains transformation layers (dbt, SQL); ensures clean, reliable datasets for analysts and scientists.

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Section 2: Data Analyst – Role & Responsibilities

A Data Analyst is the backbone of any data-driven organization. As a Data Analyst, you will serve as the bridge between raw data and business decisions. Your core mission is to transform complex datasets into clear, actionable insights that drive strategy and growth.

Key Responsibilities

1. Collect, clean, and validate data from multiple sources (databases, APIs, spreadsheets, logs).
2. Perform exploratory data analysis (EDA) to identify trends, patterns, and anomalies.
3. Design and build interactive dashboards and reports using Tableau, Power BI, or similar tools.
4. Write complex SQL queries to extract, transform, and analyze data from relational databases.
5. Use Python (Pandas, NumPy, Matplotlib) to automate data workflows and create visualizations.
6. Collaborate with business teams to understand requirements and translate them into analytical solutions.
7. Define, track, and report on Key Performance Indicators (KPIs) across departments.
8. Present data-driven insights and recommendations to both technical and non-technical stakeholders.
9. Ensure data accuracy, consistency, and integrity across reporting systems.
10. Document analytical processes, data dictionaries, and standard operating procedures.

Essential Skills

SQL (advanced queries, optimization) • Python (Pandas, NumPy, Matplotlib, Seaborn) • Tableau & Power BI (dashboard design, DAX, LOD expressions) • Excel (Power Query, Pivot Tables, VBA basics) • Statistics & Probability • Communication & Data Storytelling • Domain Knowledge (Finance, Marketing, Operations, etc.)

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Section 3: Course Syllabus

This 12-module program is designed for professionals who already have a working knowledge of data analysis fundamentals. The curriculum focuses on deepening technical expertise across SQL, Python, Tableau, Power BI, and Excel while building the soft skills needed to communicate insights effectively.

Module	Topic	Topics Covered
1	**SQL – Foundations & Advanced**	Recap of SELECT, JOINs, subqueries, GROUP BY, HAVING; Window functions (ROW_NUMBER, RANK, LEAD, LAG, NTILE); CTEs and recursive queries; Query optimization, execution plans, and indexing strategies; Stored procedures, views, and user-defined functions; Hands-on: Real-world business queries on sample datasets
2	**SQL – Data Warehousing Concepts**	Star schema vs. Snowflake schema; Fact tables, dimension tables, and slowly changing dimensions (SCD); ETL vs. ELT concepts; Introduction to cloud data warehouses (BigQuery, Snowflake, Redshift)
3	**Python for Data Analysis**	Python refresher: data types, loops, functions, comprehensions; NumPy for numerical computing; Pandas for data manipulation (merge, pivot, groupby, apply, lambda); Data cleaning techniques: handling nulls, duplicates, type conversions, outliers; Working with date/time data; Reading/writing CSV, Excel, JSON, and database connections
4	**Python – Data Visualization**	Matplotlib fundamentals (line, bar, scatter, histogram); Seaborn for statistical visualizations (heatmaps, pair plots, box plots); Plotly for interactive charts; Best practices in data visualization and storytelling
5	**Python – Statistics & EDA**	Descriptive statistics (mean, median, mode, variance, standard deviation); Probability distributions (normal, binomial, Poisson); Hypothesis testing (t-test, chi-square, ANOVA); Correlation and regression basics; Exploratory Data Analysis (EDA) workflow and techniques
6	**Tableau – Core Skills**	Connecting to data sources (Excel, CSV, SQL databases, cloud); Building calculated fields and parameters; Chart types: bar, line, scatter, map, treemap, waterfall, Gantt;

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Module	Topic	Topics Covered
		Filters, sets, groups, and hierarchies; Table calculations and LOD expressions (FIXED, INCLUDE, EXCLUDE)
7	**Tableau – Advanced Dashboards**	Dashboard design principles and layout best practices; Interactive dashboards with actions (filter, highlight, URL); Storytelling with Tableau Story Points; Performance optimization and extract management; Publishing to Tableau Server / Tableau Public
8	**Power BI – Core Skills**	Power BI Desktop interface and data connectivity; Power Query Editor: data transformation and M language basics; Data modeling: relationships, cardinality, cross-filtering; DAX fundamentals (CALCULATE, FILTER, ALL, RELATED, SUMX, AVERAGEX); Building visuals: cards, slicers, matrix, KPI indicators
9	**Power BI – Advanced Analytics**	Advanced DAX patterns (time intelligence, rolling averages, YoY comparisons); Row-level security (RLS) implementation; Paginated reports and Power BI Report Builder; Dataflows and incremental refresh; Publishing to Power BI Service; workspace management and scheduled refresh
10	**Excel – Advanced Analytics**	Advanced formulas: INDEX-MATCH, XLOOKUP, dynamic arrays (FILTER, SORT, UNIQUE); Pivot Tables and Pivot Charts (advanced grouping, calculated fields); Power Query in Excel for data transformation; Power Pivot and DAX in Excel; What-if analysis, Solver, and Goal Seek; Macros and VBA basics for automation
11	**Data Storytelling & Communication**	Structuring a data presentation for business stakeholders; Choosing the right chart for the right message; Avoiding common visualization pitfalls; Building executive-ready dashboards and reports; Presenting insights with confidence: narrative frameworks
12	**Capstone Project & Career Prep**	End-to-end data analysis project (data collection, cleaning, analysis, visualization, presentation); Portfolio building and GitHub for analysts; Resume and LinkedIn optimization for data roles; Mock interviews: SQL, Python, and case study rounds; Industry trends and continuous learning roadmap

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What You Will Achieve

- Write production-grade SQL queries including window functions, CTEs, and optimization techniques.
- Automate data cleaning, analysis, and visualization workflows using Python.
- Build professional, interactive dashboards in both Tableau and Power BI.
- Apply statistical methods to validate hypotheses and support business decisions.
- Deliver compelling data stories to technical and non-technical audiences.
- Complete a portfolio-ready capstone project demonstrating end-to-end analytical skills.