

# Detailed Data Analyst Roadmap: Topics Breakdown

## Stage 1: Excel & Spreadsheets (Weeks 1-2)

- Basic Navigation: Ribbons, Cells, Ranges, Worksheets
- Formulas & Functions: SUM, AVERAGE, COUNT, MIN, MAX, ROUND
- Logical Functions: IF, AND, OR, NOT, IFS
- Lookup & Reference: VLOOKUP, HLOOKUP, INDEX, MATCH, XLOOKUP
- Text Functions: CONCATENATE, LEFT, RIGHT, MID, TRIM, LEN, SUBSTITUTE
- Date Functions: TODAY, NOW, DATE, YEAR, MONTH, DAY, EOMONTH
- Aggregation: SUMIFS, COUNTIFS, AVERAGEIFS
- Data Cleaning: Text to Columns, Remove Duplicates, Flash Fill
- Pivot Tables: Create, Grouping, Calculated Fields, Refresh, Slicers
- Charts: Bar, Column, Line, Pie, Combo, Sparklines
- Data Validation & Conditional Formatting
- Basic Macros Recording

## Stage 2: SQL Fundamentals (Weeks 3-4)

- Database Concepts: Tables, Schemas, Primary/Foreign Keys, Indexes
- Basic Queries: SELECT, FROM, WHERE, DISTINCT
- Filtering: AND, OR, NOT, BETWEEN, IN, LIKE, IS NULL
- Sorting & Limiting: ORDER BY, LIMIT (TOP)
- Aggregations: COUNT, SUM, AVG, MIN, MAX, GROUP BY, HAVING
- Joins: INNER, LEFT, RIGHT, FULL OUTER, CROSS
- Subqueries: Correlated & Non-correlated
- Common Table Expressions (CTEs)
- Window Functions: ROW\_NUMBER, RANK, DENSE\_RANK, LEAD, LAG
- Set Operations: UNION, UNION ALL, INTERSECT, EXCEPT
- Case Statements, Aliases, Comments
- Transactions & Basic Optimization

## Stage 3: Python & Libraries (Weeks 5-8)

- Python Basics: Variables, Data Types, Control Flow, Functions
- Data Structures: Lists, Tuples, Dictionaries, Sets
- Comprehensions: List, Dict, Set Comprehensions
- Pandas: DataFrame & Series Creation, Indexing, Selection
- Data Cleaning: dropna, fillna, astype, duplicate handling
- Data Manipulation: merge, join, concat, groupby, pivot\_table
- NumPy: Arrays, Broadcasting, Vectorized Operations
- String Methods, DateTime Operations in Pandas
- Exploratory Data Analysis: describe, info, value\_counts
- Visualizations: matplotlib (plot, hist, scatter), seaborn (pairplot)
- File I/O: read\_csv, read\_excel, to\_csv, to\_excel
- Basic Web Scraping: requests, BeautifulSoup (optional)

## Stage 4: Data Visualization & BI Tools (Weeks 9-12)

- Visualization Principles: Chart Selection, Color Theory, Storytelling
- Tableau: Data Connection, Worksheets, Dashboards, Stories
- Tableau: Filters, Parameters, Calculated Fields, Level of Detail
- Power BI: Power Query (M), Data Model, DAX Basics
- Power BI: Measures vs Columns, Relationships, Hierarchies
- Interactive Elements: Slicers, Drill-through, Tooltips
- Publishing: Tableau Public, Power BI Service
- Dashboard Best Practices & Performance Optimization

## Stage 5: Statistics & Analysis Techniques (Weeks 13-16)

- Descriptive Statistics: Mean, Median, Mode, Variance, Std Dev
- Probability Distributions: Normal, Binomial, Poisson
- Inferential Statistics: Sampling, Central Limit Theorem
- Hypothesis Testing: Z-test, T-test, Chi-square test, ANOVA
- Regression Analysis: Linear, Multiple, Interpretation of Coefficients
- Correlation vs Causation, Multicollinearity
- Time Series Basics: Trend, Seasonality, Moving Averages
- A/B Testing: Design, Metrics, Significance
- Key Business Metrics: ROI, CLV, CAC, Churn Rate, Conversion Rate

## **Stage 6: Advanced Topics & Tools (Weeks 17-20)**

- SQL Optimization: Indexing, EXPLAIN Plan
- Python Advanced: Lambda, Map/Reduce, Decorators, Virtual Envs
- Git & GitHub: Version Control, Branching, Pull Requests
- Cloud Basics: AWS S3, Redshift, BigQuery (overview)
- ETL Concepts: Airflow, Data Pipelines, Scheduling
- Intro to Machine Learning: Scikit-learn (regression/classification)
- Automation: Python Scripts, APIs, Scheduling with Cron/Windows Task

## **Stage 7: Portfolio & Soft Skills (Weeks 21-24)**

- Project Selection: Real-world Datasets (Kaggle, Government Data)
- End-to-End Projects: Define question, Data Cleaning, Analysis, Reporting
- Documentation: Jupyter Notebooks, README files, Project Summaries
- Portfolio Site: GitHub Pages, Notion, Personal Website
- Communication: Presentations, Storyboarding, Visual Aids
- Interview Prep: SQL challenges, Case Studies, Technical Questions
- Behavioral Prep: STAR Method, Common HR Questions

## **Stage 8: Job Application & Growth (Weeks 25-26)**

- Resume Tailoring: Quantify Achievements, Keywords Optimization
- LinkedIn Optimization: Headline, Summary, Networking
- Applying: ATS-friendly Applications, Follow-ups, Referrals
- Mock Interviews: Technical & Behavioral
- Continuous Learning: Certifications, Workshops, Online Communities