Detailed Roadmap & Free Resources to Become a Data Analyst
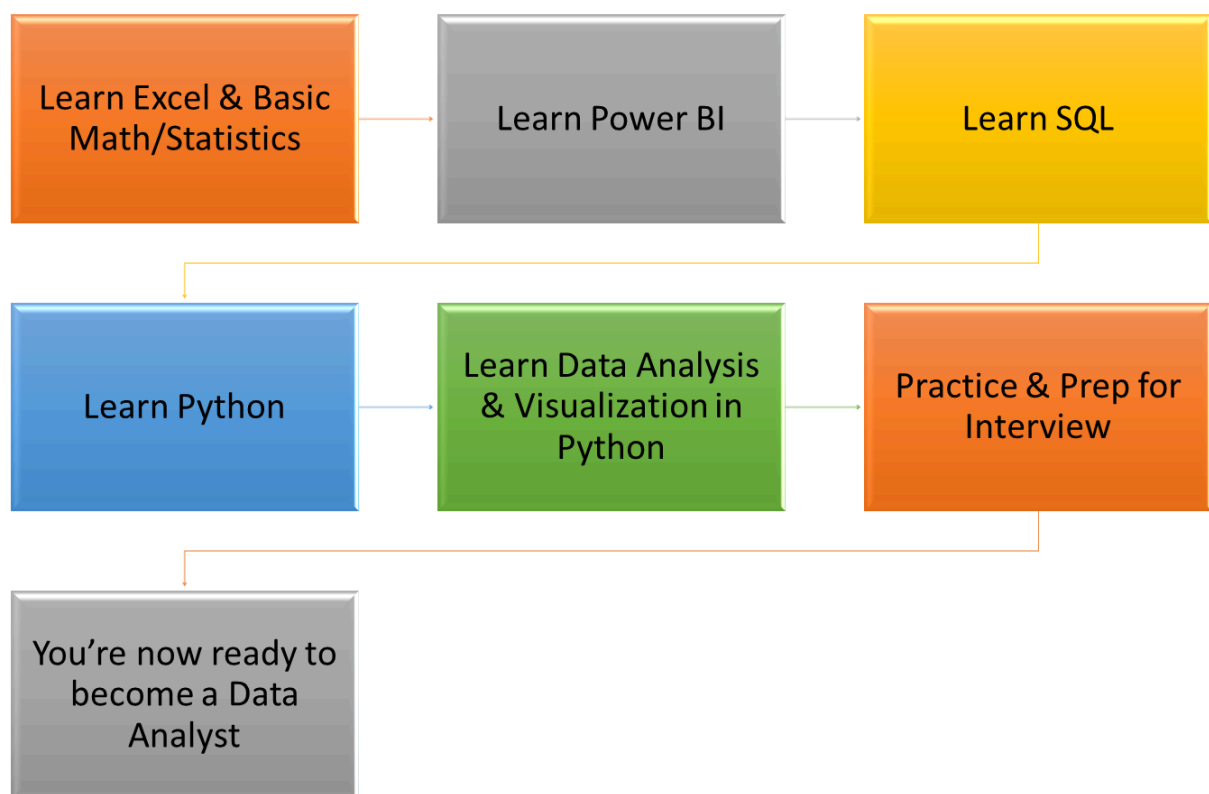
This roadmap is designed for complete beginners to learn Data Analyst skills, even without any prior coding or computer science knowledge. It covers all technical skills with free learning resources provided for each.

Expected Duration: 3 to 4 months

To understand what a data analyst does, you can go through this:
https://www.simplilearn.com/data-analyst-job-description-article

How to Become a Data Analyst

```
Learn Excel & Basic      →   Learn Power BI      →   Learn SQL
Math/Statistics
        ↓

Learn Python       →   Learn Data Analysis   →   Practice & Prep for
                       & Visualization in        Interview
                       Python
        ↓

You're now ready to
become a Data
Analyst
```

Step 1 - Learn Excel and Basic Math/Statistics

For foundation skills, learn Excel and Basic Math/Statistics.

Why Excel: Although Python, SQL, and BI tools are widely used in data analytics, **Excel remains essential** for data analysis and reporting, especially in business environments. No coding is required, making it easy to grasp fundamental concepts. Once you're comfortable

with **data cleaning, formulas, and visualization**, transition to **SQL and Python** for handling larger datasets.

Topics you need to cover in Excel

➔ Basic Formulas: SUM, AVERAGE, PRODUCT, MEAN, MEDIAN, IF, SUMIF
➔ Advanced Formulas: VLOOKUP, MATCH, INDEX
➔ Pivot Tables
➔ Basic Charting, Filters, Sorting
➔ Power Query

YouTube Videos to learn Excel

- ▶ Complete Excel Tutorial for Data Analysis in 4 Hours (with FREE Files)
- ▶ Excel Tutorial | Microsoft Excel Tutorial | Excel Training | Intellipaat

Why Basic Math/Statistics: A data analyst's job is to **interpret data and draw conclusions**, which requires a solid understanding of **mathematics and statistics**.

YouTube Videos to learn Basic Math & Statistics for Data Analyst

- https://youtu.be/npgbI8KYvN8?si=tzlP90cM74ZbpEwO
- https://youtube.com/playlist?list=PLeo1K3hjS3uuKaU2nBDwr6zrSOTzNCs0I&si=aXsfHnZByfmlWRE8

Step 2 - Learn Power BI

Why Power BI: Power BI is a **Business Intelligence (BI) tool** that helps analyze and visualize data efficiently. After learning **Excel and Maths**, Power BI is the next logical step because Power BI expands Excel's capabilities with **interactive dashboards, automation, and real-time data connections**.

Topics you need to cover in Power BI

➔ Connecting to different data sources
➔ Data Transformation in Power Query
➔ Creating metrics using DAX & Data Modelling
➔ Creating visuals
➔ Dashboarding
➔ Publishing to Power BI Service

YouTube Videos to Power BI (You can choose anyone from the below playlists)

- https://www.youtube.com/watch?v=bQ-HTp-tx40
- https://youtube.com/playlist?list=PLmejDGrsgFyDMME3o2CamamZ8w9NxSWWo&si=kgMcdlH4MEnJPf6t

Projects

- https://youtube.com/playlist?list=PLeo1K3hjS3uva8pk1FI3iK9kCOKQdz1I9&si=7kMqudGce3f9Sal5
- https://www.youtube.com/watch?v=j4xlVLgsmNQ

Step 3 - Learn SQL

Why SQL: SQL is extremely important for learning Data Analyst skills. It allows you to work with structured data stored in databases. As a Data Analyst, you need SQL to extract, manipulate, and analyze data from these databases. Power BI is great for visualization, but **SQL helps efficiently extract and clean data from databases** before visualization. Most companies store data in **SQL databases (MySQL, PostgreSQL, SQL Server, etc.)**, and analysts must query it directly.

YouTube videos to learn SQL

- https://www.youtube.com/watch?v=nopIGY1zJE0
- https://www.youtube.com/watch?v=2w-M4z-iQpk

Free Courses to learn SQL

- https://www.w3schools.com/sql/
- https://sqlbolt.com/

Step 4 - Learn Python

Why learn Python & Data Analysis in Python: Even with knowledge of SQL and Power BI, learning Python and Pandas is valuable for a data analyst because it provides a more flexible and powerful toolset for complex data manipulation, advanced statistical analysis, automation, and custom data visualization, allowing you to tackle more intricate projects and gain deeper insights from your data that might be limited by the capabilities of Power BI alone. While SQL and Power BI are excellent tools for basic data querying and visualization, Python with Pandas expands your data analysis capabilities significantly, allowing you to tackle more complex problems and gain deeper insights from your data, making you a highly skilled Data Analyst.

Topics you need to cover in Python

- ➔ Variables, Numbers, Strings
- ➔ Lists, Dictionaries, Sets, Tuples
- ➔ If condition, for loop
- ➔ Functions, Lambda Functions
- ➔ Modules (pip install)
- ➔ Read, Write files

➔ Exception handling
➔ Classes, Objects

YouTube Videos to learn Python

- https://youtube.com/playlist?list=PL-osiE80TeTt2d9bfVyTiXJA-UTHn6WwU&si=9ING_XKiJKrSYDgR
- https://youtube.com/playlist?list=PLu0W_9III9agwh1XjRt242xIpHhPT2llg&si=uY9q2ceGXI6bmQI4

Free Courses to learn Python

- https://www.edx.org/learn/python/harvard-university-cs50-s-introduction-to-programming-with-python
- https://www.geeksforgeeks.org/courses/python-course-certification-free
- https://www.freecodecamp.org/learn/scientific-computing-with-python/

Exercises to learn Python

- https://github.com/codebasics/py/tree/master/Basics/Exercise

Step 5 - Learn Data Analysis & Data Visualization in Python

For Data Analysis in Python, learn Numpy & Pandas

a. YouTube videos to learn Numpy (You can choose anyone from the below playlists)
- https://www.youtube.com/playlist?list=PLeo1K3hjS3uset9zIVzJWqplaWBiacTEU
- https://www.youtube.com/watch?v=ZaKzw9tULeM&list=PLjVLYmrlmjGfgBKkIFBkMNGG7qyRfo00W
- https://youtube.com/playlist?list=PL9n0l8rSshSnragNblKDBsT8Xu3otp3jA&si=ltkXQ5eAegFYbkWk

b. YouTube videos to learn Pandas (You can choose anyone from the below playlists)
- https://youtube.com/playlist?list=PLeo1K3hjS3uuASpe-1LjfG5f14Bnozjwy&si=0HgEHxoGYWpbSPcS
- https://youtube.com/playlist?list=PLjVLYmrlmjGdEE2jFpL71LsVH5QjDP5s4&si=K5UEPCkXolFWusN8

For Data Visualization in Python, learn Matplotlib & Seaborn

a. YouTube videos to learn Matplotlib (You can choose anyone from the below playlists)
- https://youtube.com/playlist?list=PLeo1K3hjS3uu4Lr8_kro2AqaO6CFYgKOl&si=ejpRnZcF1JQhJUtK
- https://youtube.com/playlist?list=PLjVLYmrlmjGcC0B_FP3bkJ-JIPkV5GuZR&si=kIf5Fi7QaNyRZVqT

b. YouTube videos to learn Seaborn
- https://youtube.com/playlist?list=PLjVLYmrlmjGfhqSO3rF4n02rrj9w2Ch2C&si=sUuG7RZj6c1VaX47

Step 6 - Practice & Prepare for Interview

For Interview Preparation

➔ SQL interview preparation - https://datalemur.com/
➔ Check out this channel for interview questions & projects related to SQL - https://www.youtube.com/@techTFQ
➔ Check out this channel for interview questions related to Power BI - https://www.youtube.com/@learnwidgiggs/playlists
➔ https://www.interviewbit.com/data-analyst-interview-questions/
➔ https://www.geeksforgeeks.org/data-analyst-interview-questions-and-answers/
➔ github.com/Devinterview-io/data-analyst-interview-questions?tab=readme-ov-file
➔ https://www.youtube.com/watch?v=oaq02pqYtew

Projects to add to your resume

➔ https://youtube.com/playlist?list=PLeo1K3hjS3utcb9nKtanhcn8jd2E0Hp9b&si=47fBQCbonNnM5uYL
➔ https://youtube.com/playlist?list=PLO9LeSU_vHCWpfLDRTT5nBz9Z0libOs5k&si=klTtoVdJb5XpsDW9
➔ https://youtube.com/playlist?list=PLO9LeSU_vHCWpfLDRTT5nBz9Z0libOs5k&si=klTtoVdJb5XpsDW9
➔ https://github.com/topics/data-analytics-project

Congratulations, You're now ready to become a Data Analyst!

Free Certifications on Data Analyst Skills

- https://grow.google/intl/en_in/data-analytics-course/?utm_source=google&utm_medium=institutions&utm_campaign=gwgsite-en_in-data_analytics&tab=get-started-in-the-field
- https://learn.microsoft.com/en-us/training/paths/data-analytics-microsoft/
- https://www.mygreatlearning.com/data-analytics/free-courses
- https://www.simplilearn.com/learn-data-analytics-for-beginners-skillup