Month 1

1. Introduction to Data Analysis (Week 1)

- Definition and importance

- Types of data analytics: descriptive, diagnostic, predictive, prescriptive

2. Foundational Skills (Week 1-2)

- Mathematics and Statistics

- Algebra: basic operations, equations, inequalities

- Calculus: integrals, derivatives (optional)

- Linear Algebra: matrices, vectors, transformations

- Probability: distributions, random variables

- Descriptive Statistics: mean, median, mode, standard deviation

- Inferential Statistics: hypothesis testing, confidence intervals

3. Data Handling and Preparation (Week 3)

- **Data Collection**

  - Methods: surveys, experiments, web scraping

  - Tools: APIs, databases

- **Data Cleaning**

  - Handling missing values

  - Removing duplicates

  - Identifying outliers

- **Data Transformation**

  - Normalisation, scaling

  - Encoding categorical variables

4. Programming for Data Analysis (Week 4)

  - **Excel (Spreadsheet)**

    - Data manipulation with spreadsheets

    - Advanced Formulas

    - Data visualisation in Excel

  - **Python**

    - Data manipulation with Pandas

    - Data visualisation with Matplotlib and Seaborn

  - **SQL**

    - Querying databases

    - Data extraction and manipulation

Month 2

5. Data Visualisation Techniques (Week 5)

  - **Principles of effective data visualisation**

  - **Types of charts and graphs**

    - Bar charts, histograms

    - Line charts, scatter plots

    - Box plots, violin plots

  - **Tools for data visualisation**

    - Tableau, Power BI

    - Python libraries: Matplotlib, Seaborn

6. Practical Applications and Projects (Week 6-7)

   - Case studies in various industries

  - Hands-on projects:

   - Predicting sales trends

   - Customer segmentation analysis

   - Data visualisation dashboards (4 Projects)

     1. Finance Dashboard (Excel)

     2. Covid Database (Tableau / PowerBI)

     3. Netflix Dashboard (Tableau/ PowerBI)

     4. Airline Data Analysis (Sentiment analysis + Data Mining) - Python

7. Professional Development (Week 8)

  - Building a portfolio

  - Networking in the data analytics community

  - Preparing for data analyst interviews