1.Introduction to Data Analytics and Python for Analytics

Introduction to Data Analytics:

- Understanding data analytics, its importance, and career opportunities
- Overview of Python as a tool for analytics

Python Basics:

- Introduction to Python: Syntax, data types, operators
- Control flow: Conditionals, loops, functions
- Python libraries for analytics: NumPy, Pandas, Matplotlib

2. Data Handling with NumPy

Introduction to NumPy:

- Purpose of NumPy and its role in numerical computing
- Installation and importing NumPy

Basics of NumPy Arrays:

- Creating 1D, 2D, and multi-dimensional arrays
- Array initialization: np.zeros(), np.ones(), np.random()

Array Operations:

- Element-wise operations and scalar operations
- Array broadcasting and mathematical functions: np.sum(), np.mean(), np.sqrt(), etc.

Indexing, Slicing, and Iterating:

- Indexing and slicing arrays
- Iterating over arrays

3. Data Manipulation and Cleaning with Pandas

Introduction to Pandas:

- Purpose and key features of Pandas for data manipulation
- Installation and importing Pandas
- EDA

Series and DataFrames:

- Creating Series and DataFrames
- Importing and exporting data using Pandas

Data Manipulation:

- Indexing and selecting data
- Filtering, sorting, and grouping data
- Handling missing data: isnull(), dropna(), fillna()

Merging and Concatenation:

- Merging DataFrames using merge() and join()
- Concatenating and appending data

4.Data Visualization with Matplotlib and Seaborn

Introduction to Data Visualization:

- Importance of visualization in analytics
- Overview of Matplotlib and Seaborn

Basic Plotting with Matplotlib:

- Line plots, bar charts, histograms, scatter plots
- Customizing plots: titles, labels, legends

Advanced Visualizations with Seaborn:

- Creating heatmaps, pair plots, box plots
- Aesthetics and styling with Seaborn

Saving and exporting visualizations:

- Exporting visualizations to different formats (e.g., PNG, PDF)

5. Statistics for Data Analytics

Descriptive Statistics:

- Measures of central tendency: mean, median, mode
- Measures of dispersion: variance, standard deviation, range
- Skewness and kurtosis

Probability Distributions:

- Discrete distributions: Binomial, Poisson
- Continuous distributions: Normal, Exponential

Inferential Statistics:

- Hypothesis testing: t-tests, chi-square tests
- Confidence intervals and p-values

6. SQL for Data Analytics

Basics of SQL:

- Introduction to databases, tables, and records
- Writing basic queries: SELECT, FROM, WHERE

Data Filtering and Sorting:

- Using WHERE, AND, OR, and NOT operators
- Sorting data with ORDER BY

Aggregation and Grouping:

- Aggregate functions: COUNT, SUM, AVG, MIN, MAX
- Grouping data using GROUP BY and HAVING

Joins and Subqueries:

- INNER, LEFT, RIGHT, and FULL OUTER JOINS
- Writing subqueries and correlated subqueries

7. Advanced SQL and Data Processing

Data Modification:

- INSERT, UPDATE, DELETE operations
- Handling NULL values with IFNULL and COALESCE

Window Functions:

- Ranking functions: ROW_NUMBER, RANK, DENSE_RANK
- Aggregate window functions: SUM, AVG over partitions

String and Date Functions:

- String manipulation: CONCAT, LENGTH, UPPER, LOWER
- Date and time functions: NOW, DATEDIFF, DATEADD

Performance Optimization:

- Indexing and query optimization techniques

8. Excel for Data Analytics

Basics of Excel:

- Data entry, formatting, and basic formulas: SUM, AVERAGE, COUNT

Data Manipulation:

- Sorting, filtering, and using text functions (LEFT, RIGHT, FIND)
- Conditional functions: IF, AND, OR

Data Analysis Tools:

- Pivot tables and pivot charts
- Data validation and conditional formatting

9. Data Visualization with Power BI or Tableau

Introduction to Power BI (or Tableau):

- Overview and setup
- Connecting to data sources and data loading

Data transformation and modeling:

- Creating relationships, measures, hierarchies

Data visualization and dashboards:

- Creating reports, and interactive dashboards, using slicers (Power BI) or filters (Tableau)

Practical exercises:

- Designing and presenting dashboards

10.Additional:

Hands-On Projects:

- Real-world projects and case studies throughout the course to provide practical experience and reinforce learning.

Quizzes and Assessments:

- Regular quizzes and assessments to gauge understanding and provide learner's feedback.

Resources:

- Access to additional resources such as code material, tutorials, articles, and videos for deeper understanding.