Data Analytics Syllabus

Course Description: This course introduces data analysis for beginners and intermediate learners. Students will learn fundamental concepts, techniques and tools for collecting, cleaning, exploring, and visualizing data. The course covers both theoretical foundations and practical applications of data analysis using Python and popular libraries such as pandas, NumPy, Matplotlib, Power BI, MySQL.

Introduction

- Overview of Data Analytics
- Opportunities and Career Paths in Data Analytics
- Roles and Responsibilities of a Data Analyst

MS Excel

- Basic Excel Functions
- Data Entry and formatting
- Formulas and Functions
- Data Tables and ranges
- Charts and Graphs
- Pivot tables and Pivot charts
- Data Validation
- Conditional Formatting
- Filtering and Sorting
- Advanced formulas
- Data Analysis Tools

DAX

- Introduction
- DAX Function : Calculate vs Calculate Table DAX
- How to apply DAX function in PowerBI
- Sum vs SumX
- Sort Month Name
- Count, CountA, CountX, CountAX
- VLookup function
- Datediff function
- Keep Filters DAX function
- Combination of DAX SelectColumns with Filter Function
- Filter DAX Function
- MAXX with Filter DAX function
- How to achieve DAX function with easy variables
- IF + VLookup

SQL (Structured Query Language)

- Introduction
- How to Install PostgreSQL
- Connect database with PostgreSQL
- Select Statement
- Distinct Statement
- Count function
- Apply Where statement with OR, AND condition
- Orderby statement
- LIMIT Query
- Between Clause
- IN statement

- Like statement
- Top 5 aggregate statement
- As statement
- Inner Join
- Outer Join
- Create table in SQL through Query Editor

Data Visualization using PowerBI

- Introduction
- Get Data from Excel
- Get Data from Web
- Unchecked important setting of PowerBI
- Multiple Excel File uploading
- Combined 4 files into one single module
- Remove unwanted columns
- Text to columns
- Reference option
- Edit in PowerBI manually
- Remove unwanted Files
- Relationship between tables
- NestedIF in PowerBI
- PowerBI with DAX
- DAX Function
- DAX Formula
- PowerBI DAX vs Measure
- Measure vs Calculated Columns
- PowerBI Measure IF statement
- Types of header in PowerBI
- PowerBI Conditional Formatting
- Data drill
- Dashboard in PowerBI

- PowerBI Service vs. PowerBI Desktop
- Display Pecentage and Number in PowerBI Graph
- PowerBI Tips & Tricks

Numpy

- Indroduction
- Creating array with dimensions
- Indexing, Accessing array element
- Numpy array slicing
- Datatypes
- Array Copy and View
- Shape
- Reshaping
- Iterating
- Joining
- Splitting
- Searching
- Sorting
- Filters
- Random Number : rand(), randint() & choice()
- Numpy Seaborn
- Distribution
- Bionomial Distribution
- Poisson Distribution
- Uniform Distribution
- Logistic Distribution
- Multinomial Distribution
- Exponential Distribution
- Chi square Distribution
- Rayleigh Distribution
- Pareto Distribution

- Zipf Distribution
- Numpy Universal Function
- Crete your own Unfunc
- Arithmetic Ufunc
- Random Decimal UFunc
- Summation and Cumulative Sum
- Product & Cumulative Product
- Diff function
- LCM
- GCD or HCF
- Trignometric function
- Hyperbolic function
- UFuncs SET function

Pandas

- Introduction
- Installation
- Series()
- Dataframes
- Read_csv() vs to_String()
- Read Dictionary as JSON
- Pandas viewing & analyzing dataframes
- Cleaning Data | Cleaning empty cells
- Clearing data of wrong format
- Cleaning & Fixing wrong data
- Removing Duplicates
- Iloc function in pandas dataframe

Matplotlib

- Introduction
- Installation of Matplotlib
- Pylot && Plotting

- Markers
- Line, LineStyle & Line Color
- Lables & Title
- Gridlines
- Subplots, Display & Multiple Plots
- Scatter Plots : Create, Size, Color & Alpha
- Bars : Create, Width & Color
- Histogram – hist() function
- Add data values in the Bar or Linegraph