**Data analytics outline**

**Part I**

. **GETTING STARTED (ADVANCED EXCEL) – estimated time of completion 2 weeks (18 hours)**

1. Introduction to data and Information.
   1. What is Data and analytics
   2. Information analysis with data
   3. Gearing Up for data analysis
2. Organize and Analyze Data to drive decision making.
   1. Sorting and filtering data
   2. Cell referencing methodology and using define name
   3. Data Validation and formatting data
   4. Using logical functions (IF, SUMIF, COUNTIF, IFCOUNTIF)
   5. Putting It All Together
3. Summarizing data using micro-Analysis.
   1. Data summary using VLOOKUP, Hookup
   2. What if analysis
   3. Index match
   4. Introducing Chart features (data item and values)
4. Analyzing and interpreting Data using pivot data and charts
   1. Creating and managing pivot table reports
   2. Customizing pivot table reports
   3. Data filtering in Pivot tables
   4. Creating and disconnecting slicers
   5. Building responsive Dashboards

**FUNDAMENTAL OF STATISTICS FOR ANALYTICS(INFERENTIAL) estimated time of completion 2 weeks (18 hours)**

1. **INTRODUCTION TO INFERENTIAL STATISTICS**
   1. Understanding the need for statistics in data analytics
   2. Distinctions of Data
   3. Descriptive statistics(roles)
   4. Data types in inferential statistics
   5. Identify and describe the scales of measurement
   6. Working with standard statistical measures
   7. Test Your Knowledge so far
2. Data Visualization and interpretation.

* 1. Identify data representation
  2. Data representation using categorical and numeric data
  3. Data presentation using charts
  4. Test Your Knowledge so far

1. Regression analysis (prediction & forecast).
   1. Understanding the concept of Regression
   2. Methods of regression
   3. Relevance of R square in regression
   4. Working with single and multivariate regression
   5. Concept of prediction and forecast
   6. Test Your Knowledge so far
2. Causality and Correlation.
   1. Understanding causality and correlation
   2. How to measure correlation and causality
   3. Managing incorrect correlation
   4. Principles of recommender’s engines
   5. Test Your Knowledge so far
3. Statistical analysis using Parametric and Non-Parametric Tests.
   1. Identify and describe the types of errors
   2. Power of statistical testing
   3. Hypothesis Testing
   4. Hypothesis Testing methodology
   5. Test Your Knowledge so far

. **QUERYING DATA USING SQL SERVER** - **estimated time of completion 1 month (36 hours)**

1. Data, Databases, schemas and database management system
   1. What are databases?
   2. Relational database management system (RDBMS)
   3. How create, select, backup and delete a database
   4. Saving queries in SQL server
2. Managing database and tables
   1. Data types in SQL
   2. SQL operators
   3. Introduction to tables and records
   4. SQL constraint
   5. Data definition language (DDL)
   6. Data Query language (DQL)
   7. Data manipulation language (DML)
   8. SQL VIEWS
   9. SQL injection
3. Retrieving data in SQL server
   1. Where clause
   2. SQL like
   3. Data retrieval using IN, Between, SQL All, Any, Having, Exist, and SQL AND, OR, NOT
   4. SQL joins
   5. SQL union
   6. Stored procedures
   7. Transactions
   8. Batches and triggers
4. Sorting records
   1. Order by
   2. Distinct keyword
   3. Top keyword
   4. Offset and fetch
   5. % wildcard
   6. Underscore wildcard
5. Functions
   1. String functions
   2. Aggregate Functions
   3. Scalar functions
   4. Date and time functions
   5. Conditional functions
   6. Conversion function
6. Subqueries
   1. Subquery with select statement
   2. Subquery with insert statement
   3. Subquery with update and delete statement

**INTRODUCTION TO POWER BI - estimated time of completion 1 month (36 hours)**

1. Creating and formatting a table visualization:
   1. Visualizations
   2. Viewing data
   3. Focus mode and Different visualization
   4. Saving visualization to the Desktop and to the Power Bl service
   5. Customize visualization
      1. Formatting font and font size
      2. Formatting colors
      3. Stylistic options
      4. Position visuals
      5. Align visuals
      6. Format Painter
      7. Configuring summarization, both default and in a specific visualization
      8. Changing number and date formatting
      9. Custom number and date formatting
2. Creating different visualizations: Matrices and bar charts
   1. Data Matrix
   2. Drill down data, see data and records, and export data
   3. Stacked bar charts and switch for reports
      1. Bar Chart formatting
      2. Clustered and 100% Stacked bar charts
   4. Line and area charts
   5. Combo charts (Line and column charts)
3. Adding more control to your visualizations
   1. Adding Text boxes, Images and Shapes
   2. Visual level, page level and report level filters - basic filters
   3. Advanced Filtering
   4. Slicer
   5. Sort visuals
   6. Configure small multiples
   7. Group and layer visuals by using the Selection pane
   8. Buttons and Actions
   9. Natural Language Queries and Page Formatting
4. Getting Data
   1. Sort and Filter
   2. Split Column

Getting Multiple file

* 1. Merge Queries and Expand Table
  2. Merge Queries with Group By, and different types of Joins
  3. Appending two queries together
  4. Appending three or more queries together + resolving a problem with data types

1. Creating a Data Model
   1. Modeling and DAX functions
   2. Get multiple data sets, and connecting them together
   3. The problems with direction of relationships between data sets
2. Introduction to DAX functions, including Logical functions
   1. DAX functions - A useful Resource
   2. Calculated columns - an introduction
   3. Basic operators
   4. IF, BLANK and ISBLANK
   5. AND, OR and NOT
3. Dashboards
   1. Differences between dashboards and reports
   2. Manage Tiles on a Dashboard, Set Mobile View, and other Tiles options
   3. Dashboards: Options
   4. Configure Subscriptions
   5. Pin a Live Report Page to a Dashboard
   6. Use the Q&A Feature
   7. Add a Dashboard Theme
   8. Apply or Change Sensitivity Labels
   9. Configure Data Alerts

**PART 2**

**Data analysis with tableau**

**estimated time of completion 1 month (36 hours)**

1. Introduction to Tableau
   1. What is Tableau
   2. Tableau Features
   3. File type used in Tableau
   4. Tableau Live & extract
   5. Dimensions and measures
2. Filters and Charts in Tableau
   1. Data source filters
   2. Dimension and dependent filters
   3. Text Table
   4. Heatmap
   5. Pareto charts
   6. Highlight Table
   7. Symbol Ma
3. Data blending in Tableau
   1. What is data blending in Tableau
   2. Joins V/S data blending
   3. Benefits and limitations of blending
   4. Relation like VLOOKUP
   5. Function boosters
   6. Functions and calculations
   7. If & case functions
4. Parameters and Lod expressions in Tableau
   1. Creating parameters
   2. Parameters vs filter
   3. syntax of LOD expressions
   4. table v/s lod expressions
5. Dashboards
   1. Data visualization
   2. Data analysis
   3. Interactive dashboards
   4. Integration of data
   5. Data sharing and collaboration

**PYTHON FOR ANALYSIS**

**estimated time of completion 1 month(36hours)**

1. Introduction to python for data analysis
   1. What Is python for analytics
   2. Python interface (getting familiar with python)
   3. Python data types
   4. Python operators
   5. File handling
   6. Importing and exporting data in python
   7. Accessing database with python
2. Data wrangling in python
   1. Processing data in python
   2. Managing missing values in python
   3. Data formatting in python
   4. Data normalization
   5. Manipulating data using data types
   6. Data conversion
3. Functions and Packages
   1. Introduction to functions
   2. Managing familiar functions
   3. Multiple arguments
   4. Methods
   5. Packages
   6. Importing packages
   7. Selective imports

Control flow in python

* 1. Introduction to control flow and conditional statement
  2. For loops
  3. While loops
  4. Break statements
  5. Continue statements
  6. Zip function
  7. Enumerate function

Python modules

* 1. Extracting and working with python modules (NumPy, Pandas SciPy, Django)
  2. Exploratory data analysis
  3. Working with matplotlib
  4. Data cleaning with pandas
  5. Data visualization using matplotlib and seaborn
  6. Statistics with python
  7. Machine learning in python
  8. Modelling development in python

User input and error handling

* 1. Introduction to error handling
  2. User input
  3. Syntax error
  4. Exceptions

**R PROGRAMMING**

**estimated time of completion 1 month (36 hours)**

1. Introducing to R programming.
   1. How to install R Working environment
   2. Operators
   3. Data types in R
   4. Workspace and working directory
   5. Test your knowledge so far
2. R Data structures.
   1. vector
   2. working with data frames
   3. matrices
   4. list and factors
3. Data wrangling
   1. Sort and order
   2. Subset data
   3. Categorize
   4. Split
   5. Aggregate data
   6. Merge data frames
4. Programming in R
   1. Creating functions in R
   2. If else statements in R
   3. For and while loops
   4. Apply functions
   5. Tapply
   6. Sapply
5. Import and export data in R
   1. Learn to read and write data from various sources
   2. Import txt files
   3. Import and export excel files
   4. Import csv files
   5. Export data
6. Graphics in R
   1. Plot function
   2. Scatter plots
   3. Histograms
   4. Bar and box plots
   5. Pie charts
   6. Advanced graphics using ggplot2
7. Statistics in R
   1. Mean calculation in R
   2. Variance and standard deviation in R
   3. Calculate the median
   4. Mode estimation
   5. Normal and exponential distribution