MIS & Data Analytics

iSAP 1 Year

Certification Program

MS Advanced Excel + SQL Analytics + MS Power BI + VBA Macros + Data Analytics using Python

SYLLABUS/ COURSE CONTENT

TIME DURATION: 1 year

SECTION: 1 CORE EXCEL (16 Hrs.)

- **EXCEL INTRODUCTION & ADVANCED PASTE SPECIAL TECHNIQUES**
  - Excel Interface
  - Shortcut Keys
  - Customizing Excel
  - Paste Formats, Values, Formulas, Comment, Validations
  - Operation – Sum, Multiple, Subtract, Divide
  - Transpose Table

- **FORMULA REFRENCE**
  - Relative
  - Absolute
  - Mixed

- **FORMATTING BASIC**
  - Custom Formatting
  - Conditional Formatting-Readymade

- **FORMATTING ADVANCED**
  - Customized Conditional Formatting

- **EXCEL BUILT IN FUNCTIONS**
  - Logical Functions
  - Math Functions
  - Text Functions
  - Date and Time Functions
  - Statistical Functions
  - Database Functions
  - Information Functions

ASSIGNMENT | INTERVIEW QUESTIONS | DOUBT SESSION

SECTION: 2 INTERMEDIATE EXCEL (12 Hrs.)

❖ WORKGROUP COLLABORATIONS

- Protecting, Sharing
- Formula Auditing
- Ctrl+G
- Naming Range

❖ SORTING AND FILTERING

- Advanced Sorting on 15-20 different criteria(s)
- Advanced Filters on 15-20 different criteria(s)

❖ SUMMARIZING DATA

- Adding subtotals to a list
- Nesting subtotals
- Text to column
- Flash Fill

❖ DATA VALIDATION

- Number, Date & Time Validation
- Text and List Validation
- Custom validations based on formula for a cell
- Dynamic Dropdown List Creation using Data Validation

❖ WORKING WITH EXTERNAL DATA & DATA ANYLYSIS TOOL

- Importing Data from multiple data sources
- Hyperlink
- Data Consolidation
- Goal Seek
- Solver Tool
- Financial Function
- Scenario Manager
- Data Tables

❖ USING MACROS

- Macro options
- Creating Macros
- Editing and Deleting Macros
- Use Relative References

SECTION: 3 EXPERT EXCEL (20 Hrs.)

- **ADVANCED ARRAY FUNCTIONS**
  - Basic Examples of Arrays (Using ctrl+shift+enter).
  - Advanced Use of formulas with Array
  - Sumproduct & Aggregate Function

- **LOOKUP MAHARAJ FUNCTIONS**
  - Vlookup , HLookup ,Lookup , ZZZ Lookup
  - Match , Index & Match
  - Reverse Lookup using Choose Function
  - Worksheet linking using Indirect
  - 1D, 2D, 3D Lookups
  - Duplicate Vlookup
  - V Partial & Case Sensitive & Duplicate Vlookups
  - Dynamic Lists
  - Address
  - Offset
  - Mastering Vlookup – 50+ Examples Rehearsal

- **PIVOT TABLES**
  - Introduction to PivotTables
  - Classic Pivot Table
  - How to automatically update PivotTables
  - Text Filters-how text filters are used to filter a PivotTable based on text.
  - Grouping and Pivot Charts
  - Value Field Settings and Show Values As
  - Creating Calculated Fields and CalculatedItems
  - Using Slicers, Filters, and Timelines to quickly analyse data
  - GETPIVOTDATA Function
  - Creating Pivot Tables from Multiple Ranges
  - Multiple Pivot Tables -how to create many PivotTables based on aFilter.
  - Data Model
  - Using Multiple Slicers with Pivot Tables
  - Conditional Formatting and PivotTables

- **INTRODUCTION TO POWER QUERY & POWER PIVOT**
  - Power Query
  - Power Pivot

- **CHARTS AND SLICERS**
  - Creating a chart with the 2D or 3D
  - Various Charts
  - Create Doughnut Charts, speed – o- meter chart ,
  - Create Progress , Bullet Chart

- **EXCEL DASHBOARD**
  - Planning a Dashboard
  - Adding Tables and Charts to Dashboard
  - Link with one sheet to another worksheets and workbook
  - Interactive Dashboard with Form Controls
  - Form Controls for reports automation

- **NEW FUNCTION IN EXCEL OFFICE 365**
  - New Charts-Tree Map, Waterfall, Sunburst, ForecastSheet
  - Sparklines- - Line, Column & Win/Loss
  - Using 3-D Map
  - XLOOKUP, XMATCH, SORT, SORTBY, SEQUENCE, FILTER, RANDARRAY, UNIQUE, LET,LAMBDA etc

ADVANCED GOOGLE SHEETS

MOCK INTERVIEW DRILL
(EVERY WEDNESDAY @9PM ON ZOOM)

For More Details: Visit our website at: https://www.innozant.com/

Call / WhatsApp: 7065069985

You can also visit our institute at the following address.

B-1363, First floor, office no. 7, Sarpanch Complex, New Ashok Nagar, Delhi-96.

Module 2: SQL ANALYTICS

- **INTRODUCTION TO DATABASE AND SQL**
  - Features of database
  - Log on to the database using SQL Developer environment

- **RETRIEVE DATA USING THE SQL SELECT STATEMENT**
  - List the capabilities of SQL SELECT statements
  - Generate a report of data from the output of a basic SELECT statement
  - Select All / Specific Columns
  - Use Column Heading Defaults
  - Use Arithmetic Operators
  - Understand Operator Precedence
  - Learn the DESCRIBE command to display the table structure

- **LEARN TO RESTRICT AND SORT DATA**
  - Write queries that contain a WHERE clause
  - List the comparison operators and logical operators
  - Describe the rules of precedence for comparison and logical operators
  - Use character string literals in the WHERE clause
  - Write queries that contain an ORDER BY clause
  - Sort output in descending and ascending order

- **USES OF SINGLE ROW FUNCTIONS TO CUSTOMIZE OUTPUT**
  - Describe the diff. between single row and multiple row functions
  - Manipulate strings with character function
  - Manipulate numbers with the ROUND, TRUNC, and MOD functions
  - Perform arithmetic with date data
  - Manipulate dates with the DATE functions

- **INVOKE CONVERSION FUNCTIONS AND CONDITIONAL EXPRESSIONS**
  - Describe implicit and explicit data type conversion
  - Use the TO_CHAR, TO_NUMBER, conversion functions
  - Nest multiple functions
  - Apply the NVL, NULLIF, and COALESCE functions to data
  - Use conditional IF THEN ELSE logic in a SELECT statement

- **AGGREGATE DATA USING GROUP FUNCTIONS**
  - Use the aggregation functions to produce meaningful reports
  - Divide the retrieved data in groups by using the GROUP BY clause
  - Exclude groups of data by using the HAVING clause

- **DISPLAY DATA FROM MULTIPLE TABLES USING JOINS**
  - Write SELECT statements to access data from more than one table
  - View data that generally does not meet a join condition
  - Join a table to itself by using a self-join

- **USE SUB-QUERIES TO SOLVE QUERIES**
  - Describe the types of problem that sub-queries can solve
  - Define sub-queries
  - List the types of sub-queries
  - Write single-row and multiple-row sub-queries
- **THE SET OPERATORS**
  - Describe the SET operators
  - Use a SET operator to combine multiple queries into a single query
  - Control the order of rows returned

- **DATA MANIPULATION STATEMENTS**
  - Describe each DML statement
  - Insert rows into a table
  - Change rows in a table by the UPDATE statement
  - Delete rows from a table with the DELETE statement
  - Save and discard changes with the COMMIT and ROLLBACK
  - Explain read consistency

- **USE THE DDL STATEMENTS TO CREATE AND MANAGE THE TABLES**
  - Categorize the main database objects
  - Review the table structure
  - List the data types available for columns
  - Create a simple table
  - Decipher how constraints can be created at table creation
  - Describe how schema objects work

- **OTHER SCHEMA OBJECTS**
  - Create a simple and complex view
  - Retrieve data from views
  - Create, maintain, and use sequences
  - Create and maintain indexes
  - Create private and public synonyms

- **CONTROL USE ACCESS**
  - Differentiate system privileges from object privileges
  - Create Users
  - Grant System Privileges
  - Create and Grant Privileges to a Role
  - Change Your Password
  - Grant Object Privileges
  - How to pass on privileges?
  - Revoke Object Privileges

- **MANAGEMENT OF SCHEMA OBJECTS**
  - Add, Modify, and Drop a Column
  - Add, Drop, and Defer a Constraint
  - How to enable and Disable a Constraint?
  - Create and Remove Indexes
  - Create a Function-Based Index
  - Perform Flashback Operations
  - Create an External Table
  - Query External Tables

- **MANAGE OBJECTS WITH DATA DICTIONARY VIEWS**
  - Explain the data dictionary
  - Use the Dictionary Views
  - USER_OBJECTS and ALL_OBJECTS Views
  - Table and Column Information
  - Query the dictionary views for constraint information
  - Query the dictionary views for view, sequence, index
  - Add a comment to a table
  - Query the dictionary views for comment information

- **MANIPULATE LARGE DATA SETS**
  - Use Subqueries to Manipulate Data
  - Retrieve Data Using a Subquery as Source
  - Insert Using a Subquery as a Target
  - Usage of the WITH CHECK OPTION Keyword on DML Statements
  - List the types of Multitable INSERT Statements
  - Use Multitable INSERT Statements
  - Merge rows in a table
  - Track Changes in Data over a period of time

- **DATA MANAGEMENT IN DIFFERENT TIME ZONES**
  - Time Zones
  - CURRENT_DATE, CURRENT_TIMESTAMP
  - Compare Date and Time in a Session's Time

Zone
- DBTIMEZONE and SESSIONTIMEZONE
- Difference between DATE and TIMESTAMP
- INTERVAL Data Types
- Use EXTRACT, TZ_OFFSET and FROM_TZ
- Invoke TO_TIMESTAMP, Difference between DATE and TIMESTAMP INTERVAL Data Types Use EXTRACT, TZ_OFFSET and FROTO_YMINTERVAL and TO_DSINTERVAL

❖ **RETRIEVE DATA USING SUB-QUERIES**
- Multiple-Column Subqueries
- Pairwise and Non-pairwise Comparison
- Scalar Subquery Expressions
- Solve problems with Correlated Subqueries
- Update and Delete Rows Using Correlated Subqueries
- The EXISTS and NOT EXISTS operators
- Invoke the WITH clause
- The Recursive WITH clause

❖ **REGULAR EXPRESSION SUPPORT**
- Use the Regular Expressions Functions and Conditions in SQL
- Use Meta Characters with Regular Expressions
- Perform a Basic Search using the REGEXP_LIKE function
- Find patterns using the REGEXP_INSTR function
- Extract Substrings using the REGEXP_SUBSTR function
- Replace Patterns Using the REGEXP_REPLACE function
- Usage of Sub-Expressions with Regular Expression Support
- Implement the REGEXP_COUNT function

Module 3: MS POWER BI

- **Introduction to Power BI**
  - An Overview of the Workflow in Power BI Desktop
  - Download and Installing Power BI Desktop
  - Getting to know the Interface
  - Power BI Free Vs. Pro Vs. Premium
  - Power BI Key Components
  - Introducing the Different Views of the Data Model
  - Taking a Closer Look at the Query Editor Interface

- **Power BI Vs Excel Reporting**
  - When we use which reports

- **Power BI overview Concept**
  - Dataset
  - Reports
  - Dashboard
  - Workspace
  - Tile

- **Connecting Power BI Desktop to our Data Sources**
  - Excel
  - CSV
  - Web
  - PDF
  - MS Access
  - SQL Developer
  - XML
  - Connecting to a folder
  - Others

- **Power Query**
  - When to Use Power Query
  - Import and analysis millions of Rows
  - Best things to happen in Power BI
  - Type of Connection
  - Automate your data processing
  - Query Editor Tool

- Pivoting and Un pivoting Columns
- Duplicating Vs Referencing Queries
- Transformations

❖ Editing Rows
- First Header Row
- Remove Top Rows
- Filtering- Remove-Replace
- Techniques

❖ Editing columns
- Remove or Keep Columns
- Navigation to the Columns
- Change Columns Header Name

❖ **Understanding Append Queries**
- Append Queries as existing (With two or multiple tables)
- Append Queries as New
- Formatting Data
  - Change data Type
  - Detect Data type for multiple columns
- Remove error while loading
- Remove null values
- Splitting Columns
- Delimiters
- Delimiters positions
- Creating a New Group for our Queries
- Others
  - Sorting
  - Performing Basic Mathematical Operations in Query Editor
  - Improving Performance and Loading Data into the Data Model
  - Columns distribution, Quality, Profile

❖ **Introducing the Star Schema**
- Fact Table Vs dim Table
- Star Schema | Dim Vs Fact Table

❖ **Joins**

- Outer Join
- Left, Right, Full, Anti
- Inner join

❖ **Data Table Vs Lookup Table**

- Primary key Vs, Foreign Key
- Relationship Vs. Merged Table
- Connecting Lookup to Lookups
- Relationship Cardinality
- Introducing and Understanding Relationships
- One to One Relationship
- One to Many Relationship
- Many to Many Relationship
    - Bad Cardinality Many to Many
    - Bad Cardinality One to One
    - Importance for Filter Direction
    - Editing Relationships
    - Data Model Best Practice

❖ **Working on our Data Model Data Relationship View**

- Query Editor vs. Data Model
    - Feature of Query Editor (Structure + Prepare Data)
    - Data Model – Add Relationship, Add Measures (Analysis Data)
- Active properties
- Understanding the differences between the M-Language and DAX
- DAX – Basic information
- Calculated Columns vs. Measures
- Introducing DAX-Measures
- DAX-Measures

❖ **DAX (Data Analysis Expression)**

- Math & Stats Functions
    - Sum, Average, Max/Min, Divide, Count/Counta, Countrows, Distinctcount
- Interactor Functions:
    - SUMX, AVERAGEX, MAXX/MINX, RANKX, COUNTX
- Logical Function
    - IF, IFERROR, AND, OR, NOT, SWITCH

- Text Function
  - Concatenate, Format, Left/Mid/Right,
  - Upper/Lower, Proper, Len, Search/Find,
  - Replace, Rept, Substitute, Trim
- Filter Function
  - Calculate, Filter, All, Allexcept, Related, Distinct, Values
- Date Function
  - Datediff, Yearfrace, Year/Month/Day, Hour/Minute/Second,
  - Today/Now, Weekday/Weeknum

❖ **Working in the Report View to Visualize our Results**

- Understanding the Interface of the Report View
- Creating our First Visualizations
- Editing Interactions and Adding Tooltips
- Adding Color Saturation
- Understanding Hierarchies and Adding Drill-Down
- Formatting charts and Sorting
- Essential Formatting setting: Color, Data Labels, Axis, Placement, Legends, Value
- Table View vs. Matrix View
- Conditional Formatting in Table View
- Basic Charts: Line, Bar Chart, Column Chart, Tree map, Pie, Doughnut, Area
- Tooltips – On hover Text
- Color Saturation in Column Chart
- Slicers: Vertical list Vs. Horizontal tiles
- Text Cards
- Adding Tree maps and Tables
- Applying different Filter Types
- Creating Multi-Row Cards
- Understanding Combined Visualizations and Waterfalls

❖ **Conditional columns and Data Segmentation:**

- Conditional Columns: Writing multi-layered If Conditions
- Segmentation: Use “Group By” to calculate aggregated calculation based on clusters
- Segmentation: Use “Binning” to categorize values into equally sized groups

- **Advance Visualization:**
  - KPI & Gauge Chart
  - Forecast, Trent-line
  - Map Visuals
  - Custom Visuals – Downloadable Charts
  - Use Drill down/up feature to specify chart behavior – granular view
  - Show/Expand next level
  - Filter level: Report level vs Page level vs Visual level

- **Power BI Service**
  - Introducing Power BI Service
  - Connecting to Data
  - Gateway Refresh and Data Flow
  - Understanding Gateways
  - Gateway Types
  - Reports & Dashboard
  - Sharing & Collaboration Tool
  - Power BI Mobile
  - My Workspace Vs. App Workspace
  - Creation App Workspace
  - Report Reading tool in Power BI Service
  - Pining tiles to Dashboard
  - Pining Entire report to Dashboard
  - Dashboard interface
  - Manage Alerts
  - Generate Quick insight
  - Adding personal Bookmarks
  - Web Vs. Mobile Layout

Module 4: VBA Macros

- **Introduction to VBA & Macro**
  - What is VBA and Why learning VBA is so important
  - What can you do with VBA
  - What is Macro & VBA

- **Creating a macro**
  - Swap Values
  - Run Code from a Module
  - Macro Recorder
  - Use Relative References
  - Formula R1C1
  - Add a Macro to the Toolbar
  - Macro Security
  - Protect Macro

- **MsgBox**
  - MsgBox Functions
  - Input Box Functions

- **Workbook and Worksheet object**
  - Path and Full Name
  - Close and Open
  - Loop through Books and Sheets
  - Sales Calculator
  - Files in a Directory
  - Import Sheets
  - Programming Charts

- **Range Object**
  - Current Region
  - Dynamic Range
  - Resize
  - Entire Rows and Columns
  - Offset
  - From Active Cell to Last Entry
  - Union and Intersect
  - Test a Selection
  - Possible Football Matches
  - Font
  - Background Colors
  - Areas Collection
  - Compare Ranges.

- **Variables**
  - Option Explicit
  - Variable Scope
  - Life of Variables
  - VBA (VISUAL BASIC FOR APPLICATION) & MACROS

- **IF THEN STATEMENT**
  - Logical Operators
  - Select Case
  - Tax Rates
  - Mod Operator
  - Prime Number Checker
  - Find Second Highest Value
  - Sum by Color
  - Delete Blank Cells.

- **LOOP**
  - Loop through Defined Range
  - Loop through Entire Column
  - Do Until Loop
  - Step Keyword
  - Create a Pattern
  - Sort Numbers
  - Randomly Sort DatA
  - Remove Duplicates
  - Complex Calculations
  - Knapsack Problem.

- **MACRO ERRORS**
  - Debugging
  - Error Handling
  - Err Object
  - Interrupt a Macro
  - Macro Comments.

- **STRING MANIPULATION**
  - Separate Strings
  - Reverse Strings
  - Convert to Proper Case
  - Count Words.

- **DATE AND TIME**
  - Compare Dates and Times
  - Dated if Function
  - Weekdays
  - Delay a Macro
  - Year Occurrences
  - Tasks on Schedule

- Sort Birthdays

❖ **EVENTS**
- Before DoubleClick Event
- Highlight Active Cell
- Create a Footer Before Printing
- Bills and Coins
- Rolling Average Table

❖ **ARRAY**
- Dynamic Array
- Array Function
- Month Names
- Size of an Array

❖ **FUNCTION AND SUB**
- User Defined Function
- Custom Average Function
- Volatile Functions
- ByRef and ByVal

❖ **APPLICATION OBJECT**
- Status Bar
- Read Data from Text File
- Write Data to Text File

❖ **ACTIVEX CONTROLS**
- Text Box
- List Box
- Combo Box
- Check Box
- Option Buttons
- Spin Button
- Loan Calculator

❖ **USER FORM**
- User form and Ranges
- Currency Converter
- Progress Indicator
- Multiple List Box
- Selections,
- Multicolumn Combo Box
- Dependent Combo Boxes
- Loop through Controls
- Controls Collection
- User form with Multiple Pages
- Interactive User form

Module 5: Data Analytics Using Python

- Overview of Datascience
- Data Analytics Overview
- Why Data Analytics using Python

Python

- Introduction
- Python installation
- Working with python
- Basic syntax and first program
- Variable : Naming convention , Scope
- Data Types & Type Casting
- Strings
- Conditional Statements: If, If-else, Elif, Nested if-else
- Loops and conditional
- List
- Tuples
- Dictionaries
- Set , set operators
- Arithmetic operators : Logical, comparison
- Operations (append, extend, sort, pop, insert, remove, count, max, min, count, length,index)
- Mathematical Computing with python(NumPy)
- Scientific Computing with Python(SciPy)

- **Data Manipulation with Pandas**
- **Python for Data Visualization-Matplotlib**
- **Python Data Visualization – Seaborn**
- **Statistics & Probability**
- **EDA (**Exploratory Data Analysis(EDA))
- **Data Cleaning**
- **Data Visualization**
- **Query Analysis**