



**GLOBAL
INDUSTRIES
INTELLIGENCE**

ADVANCED DATA ANALYTICS AND AUTOMATION IN EXCEL

COURSE OUTLINES

This course focuses on developing advanced skills in Excel, covering powerful data analysis techniques, automation tools, and best practices for improving efficiency and insight generation using Excel.

DAY 1: ADVANCED EXCEL FUNCTIONS AND DATA ANALYSIS

- **Overview of Excel's Advanced Features**
 - Introduction to the interface and best practices for working with large data sets
 - Customizing Excel workspace for efficiency
- **Advanced Formulas and Functions**
 - **Logical functions:** IF, AND, OR, IFS
 - **Text functions:** CONCATENATE, TEXT, MID, LEFT, RIGHT
 - **Lookup & Reference functions:** VLOOKUP, HLOOKUP, INDEX, MATCH, OFFSET
 - **Date and Time functions:** DATE, DATEDIF, NETWORKDAYS
 - **Array functions:** SUMPRODUCT, TRANSPOSE
- **Data Validation and Conditional Formatting**
 - Creating custom data validation rules
 - Using conditional formatting for visual analysis (color scales, data bars, icon sets)

DAY 2: ADVANCED DATA ANALYSIS TECHNIQUES

- **Pivot Tables and Pivot Charts**
 - Creating and customizing pivot tables for summarizing large data sets
 - Grouping data, filtering, and using slicers for better data visualization
 - Building Pivot Charts from Pivot Tables

- **Power Query (Data Transformation)**
 - Introduction to Power Query for data import and transformation
 - Data cleaning and reshaping with Power Query
 - Combining multiple data sources into one table
- **Power Pivot (Data Modeling and DAX)**
 - Introduction to Power Pivot and creating data models
 - Relationships between tables
 - Calculated columns and measures using DAX (Data Analysis Expressions)
 - Using DAX for advanced analysis (SUMX, AVERAGEX, etc.)

DAY 3: AUTOMATION WITH EXCEL MACROS AND VBA

- **Introduction to Excel Macros**
 - Recording and editing simple macros
 - Assigning macros to buttons and automating repetitive tasks



- **Introduction to VBA (Visual Basic for Applications)**

- Writing custom VBA code for automation
- Basics of VBA syntax: variables, loops, and conditional statements
- Creating user-defined functions (UDFs)

- **Advanced VBA Techniques**

- Automating complex processes with VBA
- Interacting with Excel objects: ranges, sheets, workbooks
- Debugging and error handling in VBA

- **User Forms and Interactive Dashboards**

- Designing user forms for data input and interaction
- Building dynamic, interactive dashboards using VBA and Excel controls

DAY 4: ADVANCED DATA ANALYTICS WITH EXCEL

- **Statistical and Analytical Tools**

- Descriptive statistics: mean, median, mode, variance, and standard deviation
- Advanced statistical functions: CORREL, FORECAST, REGRESSION
- Using Analysis ToolPak for complex analysis (ANOVA, t-tests, histograms)

- **Advanced Data Visualization**

- Creating advanced charts: Waterfall, Funnel, Bullet, and Histogram charts
- Using Excel's Power View and Power Map for geographical data visualization
- Leveraging dynamic charts and Sparklines for trend analysis

- **Data Simulation and Monte Carlo Analysis**

- Setting up random variables and simulations in Excel
- Running Monte Carlo simulations for risk and uncertainty analysis

DAY 5: BRINGING IT ALL TOGETHER – REAL-WORLD APPLICATIONS

- **Advanced Excel Tips and Best Practices**

- Optimizing large data sets for performance
- Efficiently managing and structuring complex workbooks
- Excel shortcuts and productivity hacks

- **Case Studies and Hands-On Project**

- Working through case studies that combine multiple techniques learned
- Developing a comprehensive Excel-based dashboard that automates reporting
- Final project review and feedback

