



**AI Vision Your Future**  
**Technical and Training Services**

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# Data Analysis Diploma

## Diploma Courses:

1. Introduction (4 hours)
2. Statistics (4 hours)
3. Excel (24 hours)
4. Power BI (24 hours)
5. SQL (20 hours)
6. Python Basics (16 hours)
7. Coaching Session (4 hours)
8. Projects

### ■ Prerequisites:

- None

## Course 1 “Statistics”: (8 hour)

### Module 1: Introduction to Data Analysis

- What is Data Analysis?
- Data Types
- Databases
- Applications of Data Analysis
- Data Analysis Tools

### Module 2: Descriptive Statistics

- Measures of Central Tendency (Mean, Median, Mode)
- Measures of Dispersion (Variance, Standard Deviation, Range)
- Histograms and Box Plots
- Probability Density Functions

## Course 2 “Excel”: (24 hour)

### Module 1: Introduction to Excel

- Understanding the Excel Interface
- Workbook vs. Worksheets
- Navigating Cells, Rows, and Columns
- Basic Data Entry and Editing

### Module 2: Formatting and Data Management

- Cell Formatting (Numbers, Text, Date, Currency)
- Conditional Formatting
- Merging & Wrapping Cells
- Sorting and Filtering Data

### Module 3: Basic Formulas and Functions

- Introduction to Formulas in Excel
- Basic Arithmetic Operations (+, -, \*, /)
- Common Functions:
  - SUM, AVERAGE, MIN, MAX
  - COUNT, COUNTA, COUNTIF
- Relative vs. Absolute Cell References (\$A\$1)



**Module 4: Working with Tables and Charts**

- Creating and Formatting Tables
- Basic Charts (Bar, Column, Pie)
- Customizing Charts (Titles, Labels, Legends)

**Module 5: Data Validation and Protection**

- Creating Drop-down Lists
- Data Entry Restrictions
- Protecting Sheets and Workbooks

**Module 6: Printing and Sharing Excel Files**

- Page Layout and Print Settings
- Saving as PDF
- Sharing and Collaboration in Excel

**Module 7: Advanced Functions and Formulas**

- Logical Functions:
  - IF, IFS, AND, OR
- Lookup Functions:
  - VLOOKUP, HLOOKUP, XLOOKUP, INDEX, MATCH
- Text Functions:
  - LEFT, RIGHT, MID, CONCATENATE, TEXTJOIN, TRIM, LEN
- Date & Time Functions:
  - TODAY, NOW, DATEDIF, EOMONTH

**Module 8: Advanced Data Management**

- Data Cleaning Techniques
- Removing Duplicates
- Advanced Sorting & Filtering
- Splitting & Merging Data with TEXT-TO-COLUMNS

**Module 9: Pivot Tables and Pivot Charts**

- Creating Pivot Tables
- Customizing Pivot Tables
- Calculated Fields in Pivot Tables
- Creating Pivot Charts

**Module 10: Data Analysis and Visualization**

- Advanced Charts (Waterfall, Heatmaps, Combo Charts)
- Trend Analysis and Forecasting
- Goal Seek and What-If Analysis



### **Module 11: Macros and Automation**

- Introduction to Macros
- Recording and Running Macros
- Introduction to VBA for Beginners

## Course 3 “Power BI”: (24 hour)

### Module 1: Introduction to Power BI

- What is Power BI? Overview and Components
- Power BI Desktop vs. Power BI Service vs. Power BI Mobile
- Understanding the Power BI Workflow (Data → Model → Visualize → Share)
- Installing and Setting Up Power BI

### Module 2: Connecting and Transforming Data (Power Query)

- Importing Data from Excel, CSV, SQL, and Online Sources
- Data Cleaning & Transformation using Power Query
- Removing Duplicates, Handling Missing Data
- Splitting & Merging Columns

### Module 3: Data Modeling Basics

- Understanding Relationships Between Tables
- Creating a Data Model in Power BI
- Primary Key vs. Foreign Key
- Introduction to Calculated Columns and Measures

### Module 4: Data Visualization in Power BI

- Creating Basic Reports & Dashboards
- Common Visuals:
  - Bar Chart, Pie Chart, Line Chart, Table, Matrix
- Formatting Visuals (Titles, Colors, Legends)
- Using Filters, Slicers, and Drill-through

### Module 5: Introduction to DAX (Data Analysis Expressions)

- Understanding DAX and its Uses
- Basic DAX Functions:
  - SUM, AVERAGE, COUNT, DISTINCTCOUNT
- Creating Basic Measures and Calculated Columns

### Module 6: Sharing and Publishing Reports

- Publishing Reports to Power BI Service
- Sharing Dashboards and Reports with Others
- Exporting Reports to PDF, PowerPoint, and Excel

### Module 7: Advanced Data Modeling & Relationships

- Understanding Star Schema vs. Snowflake Schema
- Managing One-to-Many and Many-to-Many Relationships
- Optimizing Data Models for Performance

### Module 8: Advanced DAX Functions

- Logical & Conditional Functions:
  - IF, SWITCH, HASONEVALUE
- Time Intelligence Functions:
  - YEAR, QUARTER, SAMEPERIODLASTYEAR, DATEADD
- Ranking & Aggregation:
  - RANKX, SUMX, AVERAGEX
- Advanced Measures and KPIs

**Module 9: Power Query Advanced Techniques**

- Merging & Appending Queries
- Creating Custom Columns in Power Query
- Parameterizing Queries for Dynamic Reports

**Module 10: Advanced Data Visualization Techniques**

- Custom Visuals & Advanced Charting (Gauge, Tree Map, Waterfall)
- Dynamic Visual Interactions (Bookmarks, Drillthrough, Tooltips)
- Conditional Formatting and Dynamic Titles
- Using AI-powered Visuals (Decomposition Tree, Key Influencers)

**Module 11: Performance Optimization**

- Reducing File Size & Improving Query Performance
- Best Practices for Data Refresh and Query Folding
- Using Aggregations and Optimizing DAX Measures

**Module 12: Power BI Service and Automation**

- Setting Up Data Gateways for Automatic Refresh
- Creating & Managing Dataflows in Power BI Service
- Power BI Workspaces and Row-Level Security (RLS)
- Automating Reports with Power Automate

**Module 13: Real-World Use Cases & Capstone Project**

- Business Intelligence Use Cases (Finance, HR, Sales, Marketing)
- Hands-on Capstone Project:
  - Build an End-to-End Power BI Dashboard
  - Connect, Clean, Model, Visualize, and Share

## Course 4 “SQL”: (20 hour)

### Module 1:

- Introduction to SQL and Databases
- Data Retrieval and Filtering
- Aggregation Functions

### Module 2:

- SQL Joins
- Subqueries and Nested Queries
- Data Manipulation
- Data Definition and Constraints

### Module 3

- Views and Indexes
- Transactions and Error Handling
- SQL Optimization and Best Practice





## Course 5 “Python”: (16 hour)

### Module 1: Introduction to Python

- Overview of Python and its uses
- Installing Python and running your first program
- Basic syntax and data types in Python
- Variables and assignments
- Basic arithmetic operators and expressions
- Introduction to strings and string manipulation

### Module 2: Control Structures

- Conditional statements and expressions
- Comparison and logical operators
- Loops and iteration
- Functions and function calls
- Scope and global/local variables
- Recursion and iterative algorithms

### Module 3: Data Structures

- Lists and tuples.
- Dictionaries and sets
- Arrays and matrices
- Strings and regular expressions

### Module 4: File Input/Output

- Reading and writing files
- CSV, JSON, and other data formats
- Exception handling

## Projects:

### 1. Sales Performance Dashboard

- Objective: Analyze sales data, track revenue trends, and identify top-performing products and regions.
- Tools: Excel, Power BI, SQL

### 2. General Ledger Anomaly Detection

- Objective: Detect abnormal transactions in General Ledger (GL) data.
- Tools: Excel, SQL, Power BI

### 3. Customer Churn Analysis

- Objective: Identify customers at risk of leaving based on transaction history and engagement.
- Tools: Excel, Power BI, SQL

### 4. Employee Attendance & Productivity Dashboard

- Objective: Track employee attendance, leaves, and productivity trends.
- Tools: Excel, Power BI, SQL

### 5. Salary & Compensation Analysis

- Objective: Analyze salary distribution, pay gaps, and employee compensation trends.
- Tools: Excel, Power BI, SQL

### 6. Customer Segmentation & Lifetime Value Analysis

- Objective: Segment customers based on purchasing behavior and estimate lifetime value (LTV).
- Tools: SQL, Excel, Power BI

### 7. Social Media Engagement Analysis

- Objective: Track social media engagement metrics and identify trends.
- Tools: Excel, Power BI

### 8. Inventory Optimization Dashboard

- Objective: Track stock levels, reorder points, and inventory trends.
- Tools: SQL, Excel, Power BI

### 9. Supplier Performance Analysis

- Objective: Evaluate supplier delivery times, order accuracy, and costs.
- Tools: Excel, Power BI

### 10. Property Price Prediction

- Objective: Analyze real estate price trends and predict future prices.
- Tools: SQL, Excel, Power BI