

# Data Cleaning, Analysis and AI in Excel

**Hours:** 24

## Course Overview

This course is designed to equip participants with advanced Excel skills, focusing on data cleaning, dashboard creation, analytical tools, AI-driven automation, and macros for enhanced productivity. By the end of the course, attendees will be able to streamline data operations, create dynamic dashboards, utilize Excel add-ins, and automate tasks effectively using macros.

## Pre-requisites

- Basic knowledge of Excel.
- Microsoft Office 365 (2022 version) installed on the system.

## Module 1: Power Query for Data Cleaning

### 1. Introduction to Power Query

- What is Power Query?
- Benefits of using Power Query for data cleaning.
- Accessing Power Query in Excel.

### 2. Connecting to Data Sources

- Importing data from Excel, CSV, databases, and web sources.
- Understanding query settings and data preview.

### 3. Data Cleaning Basics

- Removing duplicates.
- Handling missing or null values.
- Filtering rows and columns.

### 4. Advanced Data Transformation

- Splitting and merging columns.
- Applying conditional logic for cleaning.
- Grouping and summarizing data.

### 5. Power Query Automation

- Creating reusable queries.
- Updating data connections automatically.

### 6. Best Practices for Power Query Usage

- Tips for managing large datasets.

- Maintaining data integrity during cleaning.
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## Module 2: Tables and PivotTables for Dashboards

### 1. Creating and Formatting Tables

- Defining structured tables.
- Using table styles and slicers.

### 2. Understanding PivotTables

- What are PivotTables?
- Building your first PivotTable.

### 3. Customizing PivotTables

- Sorting, filtering, and grouping data.
- Adding calculated fields and items.

### 4. Creating Interactive Dashboards

- Integrating slicers with PivotTables.
- Using PivotCharts for visual representation.

### 5. Advanced Dashboard Techniques

- Linking multiple PivotTables.
- Dynamic dashboards with named ranges and data validation.

### 6. Best Practices for Dashboards

- Ensuring clarity and usability.
  - Managing performance with large datasets.
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## Module 3: Excel Add-Ins for Analysis

### 1. Introduction to Excel Add-Ins

- How to enable and install add-ins.
- Overview of useful Excel add-ins.

### 2. Built-In Add-Ins

- Analysis ToolPak
- Solver: Optimization

### 3. **Specialized Add-Ins**

- Data modeling for large datasets.
- Approximate matching for data cleaning.

### 4. **Practical Use Cases**

- When and why to use specific add-ins.
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## Module 4: AI Tools to Help with Quick Automation

### 1. **Introduction to AI in Excel**

- Overview of AI tools integrated with Excel.
- Benefits of AI for automation and efficiency.

### 2. **Automation with AI**

- Automating data analysis and generating insights.
- AI-generated summaries and reports.

### 3. **AI-Powered Tools**

- Text analysis tools.
- Data cleaning and merging solutions.

### 4. **Automating Data Insights**

- Using AI to identify trends and patterns.
- Predictive analytics with AI.

### 5. **Ethics and Challenges of AI Tools**

- Ensuring data privacy and avoiding biases.
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## Module 5: Macros for Easy Access and Understanding Over Different Sheets

### 1. **Introduction to Macros**

- What are Macros?
- Advantages of using Macros for automation.

### 2. **Recording Your First Macro**

- How to enable the Developer tab.

- Step-by-step guide to recording and running a Macro.

### **3. Editing and Customizing Macros**

- Modifying recorded Macros for specific needs.

### **4. Working Across Multiple Sheets**

- Automating repetitive tasks in different sheets.
- Writing Macros to consolidate data from multiple sheets.

### **5. Best Practices for Macros**

- Securing and sharing Macros with others.