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# Advanced Microsoft Excel and Data Analysis

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Boston, Massachusetts (USA)



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## Course Introduction

Microsoft Excel remains one of the most widely used tools for organizing information, analysing performance, preparing reports, and supporting business decisions. Across finance, operations, human resources, procurement, sales, project management, engineering, and public administration, professionals rely on Excel to transform raw data into structured insights. However, many users apply only a limited portion of its capabilities and continue to depend on manual calculations, repetitive formatting, disconnected worksheets, and reports that are difficult to update or verify.

Advanced Excel and data analysis skills help organizations improve the accuracy, speed, and consistency of their reporting processes. Instead of spending hours cleaning data, copying formulas, reconciling files, or rebuilding monthly reports, users can apply structured tables, advanced functions, data transformation tools, PivotTables, dynamic reports, analytical models, and automation techniques. These capabilities reduce errors and allow more time for interpretation, decision-making, and performance improvement.

A common challenge in data analysis is that information often arrives from different systems and in inconsistent formats. Dates may be incorrect, categories may be duplicated, records may contain missing values, and multiple files may need to be consolidated before analysis can begin. Without an organized data preparation process, even sophisticated formulas and charts may produce unreliable conclusions. This course therefore gives strong attention to data cleaning, validation, transformation, and model structure.

Participants will learn how to use advanced lookup, logical, statistical, text, date, and aggregation functions to solve practical business problems. They will also explore dynamic arrays, structured references, error handling, conditional calculations, and formula auditing. These skills make workbooks more flexible, transparent, and easier to maintain.

The course also develops the ability to summarize and interpret large datasets. PivotTables, PivotCharts, slicers, calculated fields, dashboards, trend analysis, scenario modelling, and key performance indicators allow users to move beyond simple reporting. Participants will learn how to identify patterns, compare performance, test assumptions, and present findings in a way that supports management decisions.

Data transformation and automation are central to advanced Excel use. Participants will explore tools for importing, combining, cleaning, and refreshing data from multiple sources. They will also learn how macros and selected automation techniques can reduce repetitive work, standardize outputs, and improve reporting efficiency while maintaining appropriate controls.

The program is designed for managers, supervisors, analysts, accountants, finance professionals, administrators, project teams, engineers, operations personnel, human resources specialists, procurement staff, and employees in government and private-sector organizations. It provides a practical framework for using Excel as a reliable analytical and decision-support tool rather than only as a basic spreadsheet application.



## Course Objectives

By the end of this course, participants will be able to:

- Organize complex datasets using structured Excel tables.
- Clean and standardize data before performing analysis.
- Apply advanced logical, lookup, text, date, and statistical functions.
- Use dynamic array formulas to create flexible analytical outputs.
- Build reliable formulas with structured references and error controls.
- Audit formulas and identify calculation inconsistencies.
- Summarize large datasets using PivotTables and PivotCharts.
- Create calculated fields, groupings, filters, and interactive slicers.
- Transform and combine information from multiple sources.
- Develop analytical models for planning and decision-making.
- Apply forecasting, scenario, sensitivity, and what-if analysis.
- Design clear management dashboards and performance reports.
- Select appropriate charts for different types of business information.
- Automate repetitive spreadsheet activities using macros.
- Protect workbook accuracy, usability, and data integrity.
- Develop a practical Excel and data analysis improvement plan.

## Course Modules

### Day 1: Advanced Data Structure and Formula Management

- Workbook and worksheet design principles.
- Structured tables and named ranges.
- Relative, absolute, and mixed references.
- Advanced conditional calculations.
- Nested logical functions.
- Modern lookup functions.
- Multi-criteria lookup techniques.
- Text extraction and data standardization.
- Advanced date and time calculations.
- Dynamic array formulas.
- Formula error handling.
- Formula auditing and dependency tracing.



## Day 2: Data Cleaning, Validation, and Transformation

- Identifying data-quality problems.
- Removing duplicates and unnecessary spaces.
- Correcting inconsistent text and numbers.
- Managing blanks and missing values.
- Splitting and combining data fields.
- Data validation rules and controls.
- Conditional formatting for data review.
- Importing external data.
- Combining multiple files and worksheets.
- Data transformation workflows.
- Refreshable data connections.
- Preparing analysis-ready datasets.

## Day 3: PivotTables and Advanced Business Analysis

- Creating PivotTables from structured data.
- Arranging dimensions and measures.
- Sorting, filtering, and grouping data.
- Date, number, and category grouping.
- Calculated fields and calculated items.
- Value display and comparison options.
- Percentage and variance analysis.
- PivotCharts and interactive reporting.
- Slicers and timeline controls.
- Multiple-table analysis concepts.
- Refreshing and maintaining reports.
- Common PivotTable errors and solutions.

## Day 4: Analytical Models, Forecasting, and Decision Support

- Descriptive statistical analysis.
- Trend and variance analysis.
- Correlation and relationship assessment.
- What-if analysis tools.
- Goal seeking.
- One-variable and two-variable data tables.
- Scenario comparison.
- Forecasting methods.
- Sensitivity analysis.
- Break-even analysis.
- Business and operational modelling.
- Interpreting analytical results.



### Day 5: Dashboards, Automation, and Practical Application

- Dashboard planning and audience analysis.
- Selection of key performance indicators.
- Chart selection and visual hierarchy.
- Dynamic chart development.
- Interactive filters and controls.
- Management-report layout.
- Macro recording and editing.
- Automating repetitive tasks.
- Workbook protection and access controls.
- Performance and file-size optimization.
- Practical data analysis case study.
- Excel reporting improvement roadmap.

## Why Should You Attend This Course?

- Analyse large and complex datasets more efficiently.
- Reduce manual calculations and repetitive reporting activities.
- Improve the accuracy and reliability of spreadsheet models.
- Clean and consolidate information from multiple sources.
- Apply advanced formulas to practical business problems.
- Create flexible reports that update with new data.
- Build interactive PivotTables, charts, and dashboards.
- Support decisions through forecasting and scenario analysis.
- Present performance information clearly to management.
- Detect formula errors and data-quality issues more quickly.
- Automate routine activities while maintaining control.
- Apply advanced Excel tools directly in the workplace.

## Course Conclusion

Advanced Microsoft Excel and data analysis skills enable professionals to manage information more accurately, work more efficiently, and provide stronger support for operational and strategic decisions. Excel becomes far more valuable when its formulas, analytical tools, data models, and reporting features are used within a clear and controlled process.

This course equips participants with practical techniques for structuring data, applying advanced calculations, transforming information, building PivotTables, developing analytical models, and presenting results through professional dashboards. It also strengthens their ability to identify errors, test assumptions, and interpret patterns rather than simply producing numbers.

Participants can apply the course outcomes by improving current reports, automating recurring tasks, consolidating disconnected files, and creating more reliable performance-monitoring tools. These improvements can shorten reporting cycles, reduce rework, and provide managers with clearer and more timely information.



Over the long term, stronger Excel capability contributes to better data quality, improved productivity, and more consistent decision-making across the organization. It also provides a practical foundation for broader business intelligence, financial analysis, operational reporting, and data-driven performance improvement.

