

# DATA ANALYTICS WITH MICROSOFT EXCEL & AI

*From Fundamentals to Advanced Business Analytics*

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## Professional Course Outline

INSTRUCTOR

**Md. Shah Alam**

Microsoft Certified Trainer (MCT)

*Corporate Data Analytics Trainer & Business Analytics Consultant*

15.5 Years of Experience | 100+ Corporate Training Sessions | 6,000+ Professionals Trained

**20**

Hours

**13**

Modules

**6**

Quizzes

**3**

Projects

## About This Course

This course is designed for aspiring data analysts, business professionals, and Excel users who want to move beyond basic spreadsheet skills and build powerful, automated, insight-driven reporting systems. Developed by a Microsoft Certified Trainer with over 15 years of real-world financial and corporate experience, every topic is taught through practical business case studies — not abstract theory.

By the end of this course, participants will be equipped to design professional MIS reports, perform advanced data analysis, build dynamic dashboards, and leverage AI tools inside Excel to accelerate their data workflows — skills recognized and valued by employers worldwide.

## Course at a Glance

Category	Details
Training Title	Data Analytics with Microsoft Excel & AI
Duration	20 Hours / 15 Lectures
Level	Basic to Advanced
Assessments	2 Benchmark Assessments
Practice Tests	6 Section Quizzes
Hands-on Projects	3 Real-World Business Projects
Take-Home Skills	Data Transformation & Manipulation, Data Analysis, Data Visualization using Advanced Functions & AI-assisted Tools
Target Audience	Data Analytics Students, Business Professionals, MIS & Reporting Analysts
Prerequisites	Basic computer literacy; no prior Excel experience required
Certification Alignment	Microsoft Office Specialist (MOS) Excel — Associate & Expert Levels

## Who Should Attend

- ✓ Business professionals who regularly work with data and want to improve reporting efficiency
- ✓ Data analytics students seeking hands-on, career-ready Excel skills
- ✓ MIS officers, financial analysts, accountants, and operations executives

- ✓ HR, marketing, and sales professionals who manage data-driven reports
- ✓ Anyone preparing for the Microsoft Office Specialist (MOS) Excel certification
- ✓ Entrepreneurs and consultants who want to build automated business dashboards

## Learning Outcomes

Upon completing this course, participants will be able to:

- ✓ Transform raw, messy data into clean, structured, analysis-ready datasets
- ✓ Build advanced formulas using Excel 365 Dynamic Array functions for automated calculations
- ✓ Create professional MIS reports with conditional logic, multi-criteria lookups, and smart formatting
- ✓ Design interactive dashboards with PivotTables, PivotCharts, slicers, and timelines
- ✓ Automate repetitive reporting tasks using Power Query's UI and M language
- ✓ Model complex multi-table data using Data Model and basic DAX measures
- ✓ Apply AI-powered tools and Excel Add-ins to solve real-world business problems faster
- ✓ Present data insights clearly using chart design best practices and non-chart visualizations
- ✓ Solve business problems systematically using structured analytical thinking
- ✓ Align Excel skills with MOS certification competencies for global employability

## Course Structure Overview

Module	Duration	Key Topics Covered
Module 1	2 hrs	Excel Fundamentals: Worksheet management, filtering, cell selection, paste options, number & data formatting, external file connections
Module 2	1.5 hrs	Formula Architecture: Formula syntax, relative/absolute/mixed cell references, learning resources, formula auditing
Module 3	1.5 hrs	Mathematical & What-If Analysis: Simplification rules, Goal Seek, Scenario Manager, rounding functions
Module 4	2 hrs	Text Manipulation: JOIN, LEFT/MID/RIGHT, FIND/SEARCH, SUBSTITUTE, dynamic text extraction, Flash Fill
Module 5	1.5 hrs	Conditional Analysis: IF/Nested IFs, AND/OR logic, COUNTIFS, SUMIFS, AVERAGEIFS for business rules
Module 6	2 hrs	Lookup & Matching: VLOOKUP, HLOOKUP, IFERROR, exact vs. approximate match, INDEX-MATCH, XLOOKUP, dynamic table fill

Module	Duration	Key Topics Covered
Module 7	1 hr	Conditional & Custom Formatting: Highlight rules, Top/Bottom rules, color scales, data bars, icon sets, custom number formats
Module 8	1 hr	Data Validation & Sorting: Validation criteria, input messages, alert types, duplicate detection, multi-level sorting
Module 9	2 hrs	PivotTables & Data Summarization: PivotTable creation, calculated fields, slicers, timelines, advanced summarization techniques
Module 10	1.5 hrs	Charts & Visualization: Standard charts, PivotCharts, formatting best practices, non-chart visualizations, sparklines
Module 11	2 hrs	Power Query & Data Modeling: Data transformation with Power Query, M language basics, table relationships, Data Model overview
Module 12	1 hr	DAX Fundamentals: Calculated columns, measures, basic DAX functions (SUM, CALCULATE, RELATED, FILTER) for advanced analysis
Module 13	1 hr	AI for Excel: Excel Copilot, AI Add-ins, ChatGPT for formula generation, automated reporting, AI-enhanced business case solving

## Detailed Course Content

★ PRE-ASSESSMENT — Diagnostic Benchmark (Excel Readiness Evaluation) ★

### PART 1: DYNAMIC DATA TRANSFORMATION & RESHAPING

Section	Topic Lead	Learning Components
Section 1	<b>Cell &amp; Data Formatting</b>	<ul style="list-style-type: none"> <li>a. Worksheet Management (add, delete, rename, group, protect)</li> <li>b. Filter, AutoFilter, and Advanced Filter with multiple criteria</li> <li>c. Cell Selection Techniques (Ctrl+Shift, Go To Special, Name Box)</li> <li>d. Copy &amp; Paste Options (Values, Formats, Transpose, Paste Special)</li> <li>e. Number Formatting (Currency, Percentage, Custom formats)</li> <li>f. Data Fill Techniques (Fill Series, Flash Fill, AutoFill)</li> <li>g. External File / Sheet Connections and Data Linking</li> </ul>
Section 2	<b>Cell References &amp; Formula Syntax</b>	<ul style="list-style-type: none"> <li>h. Where and How to Learn Excel Formulas (Help, Documentation, AI)</li> </ul>

Section	Topic Lead	Learning Components
		<ul style="list-style-type: none"> <li>i. How Excel Formula Syntax Works (arguments, operators, precedence)</li> <li>j. Cell References: Relative, Absolute (\$), and Mixed (\$A1, A\$1)</li> <li>k. Formula Auditing: Trace Precedents/Dependents, Evaluate Formula</li> <li>l. Error Types and Troubleshooting (N/A, VALUE, REF, DIV/0)</li> </ul>
Section 3	<b>Mathematical Calculation &amp; What-If Analysis</b>	<ul style="list-style-type: none"> <li>m. Operator Precedence &amp; Simplification Rules (BODMAS in Excel)</li> <li>n. What-If Analysis: Goal Seek, Scenario Manager, Data Tables</li> <li>o. Rounding Functions: ROUND, ROUNDUP, ROUNDDOWN, MROUND, FLOOR, CEILING</li> <li>p. Statistical Functions: SUM, AVERAGE, COUNT, MIN, MAX, MEDIAN, MODE</li> </ul>

★ QUIZ 1 — Section 1 Competency Check ★

Section	Topic Lead	Learning Components
Section 4	<b>Text Data Manipulation</b>	<ul style="list-style-type: none"> <li>q. Joining Text Strings: CONCAT, TEXTJOIN, &amp; operator</li> <li>r. Extracting Parts of Text: LEFT, MID, RIGHT with LEN</li> <li>s. Finding Characters: FIND, SEARCH (case-sensitive vs. insensitive)</li> <li>t. Substituting Text: SUBSTITUTE, REPLACE</li> <li>u. Cleaning Data: TRIM, CLEAN, UPPER, LOWER, PROPER</li> <li>v. Dynamic Text Extraction using Excel 365: TEXTSPLIT, TEXTBEFORE, TEXTAFTER</li> <li>w. Flash Fill for Pattern-Based Data Splitting &amp; Joining</li> </ul>

★ QUIZ 2 — Section 2-4 Competency Check ★

**PART 2: DYNAMIC BUSINESS MIS REPORTING**

Section	Topic Lead	Learning Components
Section 5	<b>Conditional Analysis</b>	<ul style="list-style-type: none"> <li>x. Simple and Nested IF Statements for business decision logic</li> <li>y. Logical Functions: AND, OR, NOT with IF for complex conditions</li> <li>z. COUNTIF / COUNTIFS: Count data that meets single/multiple criteria</li> <li>aa. SUMIF / SUMIFS: Sum data that meets single/multiple criteria</li> <li>bb. AVERAGEIF / AVERAGEIFS for conditional averages</li> </ul>

Section	Topic Lead	Learning Components
		cc. IFS and SWITCH for multi-condition simplified logic (Excel 365) dd. Business Case: Salary Band Analysis, Sales Commission Calculation
Section 6	<b>Lookup &amp; Reference Functions</b>	ee. VLOOKUP: Exact and approximate match, common errors and fixes ff. HLOOKUP: Horizontal lookup for row-based reference tables gg. IFERROR: Suppress and handle lookup errors gracefully hh. Exact vs. Approximate Match — when and why to use each ii. INDEX + MATCH: Flexible bidirectional lookup (left-lookup solved) jj. XLOOKUP: The modern replacement with spill and multiple results kk. Filling entire tables dynamically using a single lookup formula ll. Business Case: Employee Database Query, Product Pricing Lookup

★ QUIZ 3 — Section 5-6 Competency Check ★

★ BUSINESS PROJECT 1 — MIS Report Automation (Loan Portfolio / Sales Summary) ★

## PART 3: DATA ANALYSIS & VISUALIZATION

Section	Topic Lead	Learning Components
Section 7	<b>Conditional &amp; Custom Formatting</b>	mm. Highlight Cells Rules: Greater than, Less than, Duplicate Values nn. Top/Bottom Rules: Top 10%, Bottom 10 Items oo. Color Scales, Data Bars, and Icon Sets for visual KPI indicators pp. Managing and Editing Rules (Rule Manager, priority order) qq. Custom Number Formats for professional financial display rr. Text-based custom formats for dynamic data labeling
Section 8	<b>Data Validation &amp; Quality Control</b>	ss. Validation Criteria: List, Number, Date, Text Length, Custom Formula tt. Input Messages and Error Alert types (Stop, Warning, Information) uu. Detecting and Highlighting Duplicate Values with Validation vv. Dependent Dropdown Lists using INDIRECT function ww. Data Cleaning Workflow: Removing duplicates, fixing inconsistencies

Section	Topic Lead	Learning Components
Section 9	<b>Sorting &amp; Data Organization</b>	xx. Single-column and Multi-level Data Sorting yy. Custom Sort Orders (weekdays, months, custom lists) zz. Row-based and Column-based Sorting aaa. Sorting with Color-coded and Icon-coded data
Section 10	<b>PivotTables &amp; Data Summarization</b>	bbb. Creating PivotTables from flat data and data models ccc. Grouping Data: Dates (Year/Quarter/Month), Numbers, Text ddd. Calculated Fields and Calculated Items eee. Slicers and Timelines for interactive filtering fff. Show Values As: % of Total, Running Total, Rank, Difference From ggg. PivotTable Design: Compact, Tabular, and Outline layouts hhh. Advanced PivotTable: Multi-table analysis using Data Model iii. Business Case: Branch Performance Dashboard, Monthly Trend Report
Section 11	<b>Charts &amp; Graph Design</b>	jjj. Choosing the Right Chart: Column, Bar, Line, Pie, Scatter, Combo kkk. PivotCharts linked to PivotTables with slicers lll. Chart Formatting Best Practices: Labels, Axes, Gridlines, Colors mmm. Sparklines: Mini-charts inside cells for trend visualization nnn. Waterfall, Funnel, Treemap, and Sunburst for advanced use cases ooo. Non-Chart Visualizations: In-cell bar charts, heatmaps using CF ppp. Business Case: Executive Dashboard with Dynamic Charts
Section 12	<b>Power Query &amp; Data Modeling</b>	qqq. Introduction to Power Query: What, Why, and When rrr. Connecting to Data Sources: Excel, CSV, Web, Folders sss. Data Transformation: Remove nulls, split columns, unpivot, merge ttt. Append Queries: Combine multiple tables vertically uuu. Merge Queries: SQL-style joins (Left, Inner, Outer) in Excel vvv. Introduction to M Language: Editing steps in the Advanced Editor www. Data Modeling: Creating table relationships in Power Pivot xxx. Basic DAX Measures: CALCULATE, SUMX, RELATED, ALL, FILTER yyy. Business Case: Multi-Source Financial Consolidation Report
Section 13	<b>AI for Excel Reporting &amp; Business Problem Solving</b>	zzz. Excel Copilot: Generating formulas, summaries, and charts using AI aaaa. AI Add-ins for Excel: Overview of available productivity tools bbbb. ChatGPT/Claude for formula generation and error debugging cccc. AI-assisted Data Cleaning and Transformation workflows dddd. Prompt Engineering basics for Excel-specific AI queries

Section	Topic Lead	Learning Components
		eeee. From Data to Decision: Building an AI-enhanced report end-to-end ffff. Business Case: Automated Monthly MIS Report using AI + Excel

★ QUIZ 4 — Section 7-9 Competency Check ★

★ QUIZ 5 — Section 10-11 Competency Check ★

★ QUIZ 6 — Section 12-13 Competency Check ★

★ BUSINESS PROJECT 2 — Dynamic Interactive Dashboard (Sales / HR / Finance) ★

★ BUSINESS PROJECT 3 — End-to-End Data Analytics Capstone (Power Query + DAX + AI) ★

## ASSESSMENT & EVALUATION FRAMEWORK

Component	Description	Weight	Timing
<b>Pre-Assessment</b>	Excel readiness diagnostic — no grade, used to personalize delivery	<b>Diagnostic</b>	Start of course
<b>6 Section Quizzes</b>	Topic-specific competency checks after key sections	<b>Formative</b>	Throughout course
<b>Business Project 1</b>	MIS Report Automation using Conditional Logic & Lookups	<b>Summative</b>	End of Part 2
<b>Business Project 2</b>	Interactive Dashboard (PivotTables + Charts + Slicers)	<b>Summative</b>	End of Part 3
<b>Business Project 3</b>	End-to-End Analytics Capstone: Power Query + DAX + AI	<b>Summative</b>	Final week
<b>Post-Assessment</b>	Final benchmark to measure learning progress vs. pre-assessment	<b>Summative</b>	Last session

## TOOLS & TECHNOLOGY REQUIREMENTS

Category	Details
Primary Software	Microsoft Excel 365 (Microsoft 365 subscription recommended)
AI Tools Covered	Microsoft Copilot for Excel, ChatGPT / Claude for formula assistance, Excel AI Add-ins
Supporting Add-ins	Power Query (built-in), Power Pivot (built-in), Analysis ToolPak
Hardware	Windows PC / Laptop (macOS supported with limitations noted)
Practice Files	Instructor-provided business datasets for all 13 modules
Certification Path	Microsoft Office Specialist: Excel Associate (MO-210) and Expert (MO-211)

## ABOUT THE INSTRUCTOR

### Md. Shah Alam | Microsoft Certified Trainer (MCT)

*Corporate Data Analytics Trainer & Business Analytics Consultant*

- ✓ 15.5 years of professional experience including 10.5 years in leading financial institutions
- ✓ Former Head of MIS & Regulatory Reporting at LankaBangla Finance Ltd. — designed and automated core MIS and regulatory reporting systems
- ✓ Recipient of the Individual Aptitude Award for MIS report design excellence
- ✓ Delivered 100+ corporate training sessions to 6,000+ participants across 19 organizations
- ✓ Trained 4,000+ professionals in Microsoft Excel and 2,000+ in Microsoft Power BI
- ✓ Specializations: Advanced Formulas, Excel 365 Dynamic Arrays, Power Query (UI & M), DAX, Dashboard Design, Business & Data Analytics
- ✓ Academic: BBA (Full Scholarship) and MBA (Half Scholarship) — Best Student Award recipient
- ✓ Passion: Helping organizations reduce reporting time by 40% using Excel & Power BI

## MICROSOFT CERTIFICATION ALIGNMENT

This course is designed to fully align with the Microsoft Office Specialist (MOS) certification examination objectives. Participants who complete all modules, projects, and assessments will be well-prepared to attempt:

- ✓ MO-210: Microsoft Excel (Microsoft 365 Apps) — Associate Level
- ✓ MO-211: Microsoft Excel Expert (Microsoft 365 Apps) — Expert Level

*MOS certification is recognized globally by employers in finance, banking, consulting, HR, operations, and data analytics. Earning this credential demonstrates verified, practical proficiency and significantly enhances career prospects.*

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**ShahAlam: Data Training & Analytics**

*Empowering Professionals with Practical Data Skills | Excel • Power BI • AI Analytics*