

One-Day Advanced Excel Training Curriculum

Duration: 8 hours (9:00 to 5:00, including breaks) **Audience:** Confident Excel users who already build PivotTables, use XLOOKUP or INDEX/MATCH, and write nested formulas **Format:** Instructor-led, about 25% concepts and 75% hands-on labs **Prerequisites:** Excel 365 (Windows) for LET, LAMBDA, dynamic arrays, Power Query, and the Data Model. Mac users will have limited Power Pivot and VBA support.

Learning Objectives

By the end of the day, participants will be able to:

- Write compact, readable formulas using dynamic arrays, LET, and LAMBDA
- Build repeatable data pipelines with Power Query
- Model related tables with Power Pivot and write basic DAX measures
- Run what-if analysis, optimization, and sensitivity tests
- Automate repetitive tasks with recorded and edited macros
- Design a refreshable, interactive dashboard and audit workbooks for errors and performance

Schedule

Time	Module	Duration
9:00 – 9:20	Welcome, goals, skills check	20 min
9:20 – 10:40	Module 1: Advanced formulas and dynamic arrays	80 min
10:40 – 10:55	Break	15 min
10:55 – 12:15	Module 2: Power Query for data transformation	80 min
12:15 – 1:15	Lunch	60 min
1:15 – 2:30	Module 3: Data Model, Power Pivot, and DAX	75 min
2:30 – 3:30	Module 4: What-if analysis, Solver, and forecasting	60 min
3:30 – 3:45	Break	15 min
3:45 – 4:25	Module 5: Automation with macros and VBA basics	40 min
4:25 – 5:00	Module 6: Dashboards, auditing, and capstone wrap-up	35 min

Module Details

Welcome and Skills Check (20 min)

- Introductions and one real workbook problem each person wants to solve
- 10-question diagnostic covering lookups, PivotTables, and array behavior
- Shortcut refresher: Ctrl+Shift+Enter history, F9 to evaluate parts of a formula, Alt+M+V (Evaluate Formula), Ctrl+[to trace precedents

Module 1: Advanced Formulas and Dynamic Arrays (80 min)

- How spilling works: the # spill operator, #SPILL! errors, and implicit intersection (@)
- FILTER, SORT, SORTBY, UNIQUE, SEQUENCE, RANDARRAY
- Combining arrays: VSTACK, HSTACK, TAKE, DROP, CHOOSECOLS, TOCOL, WRAPROWS
- LET for naming intermediate results and improving readability and speed
- LAMBDA and named functions; array helpers BYROW, BYCOL, MAP, REDUCE, SCAN
- Advanced lookups: XLOOKUP with wildcards, search modes, and nested XLOOKUP; XMATCH; two-way lookups
- Conditional aggregation with SUMPRODUCT, AGGREGATE, and array logic
- Regular expressions and text splitting: TEXTSPLIT, TEXTBEFORE, TEXTAFTER (REGEX functions where available)
- **Lab:** Build a single-cell formula that returns a ranked, de-duplicated top-10 customer list with revenue, then wrap the logic in a reusable LAMBDA

Module 2: Power Query for Data Transformation (80 min)

- Connecting to sources: Excel files, CSV, folders, web, and databases
- Query Editor tour: applied steps, the formula bar, and the Advanced Editor (M language basics)
- Core transforms: unpivot/pivot, split and merge columns, fill down, group by, conditional columns
- Combining data: append queries, merge queries (join types), and combining all files in a folder
- Parameters and functions for reusable queries
- Error handling, data types, and query folding concepts
- Load options: table, connection only, and Data Model; refresh behavior and scheduling limits
- **Lab:** Combine 12 monthly sales files from a folder, unpivot a cross-tab layout, merge with a product master, and load a clean table

Module 3: Data Model, Power Pivot, and DAX (75 min)

- Why the Data Model beats VLOOKUP-based reporting: relationships, star schema, and cardinality
- Building relationships and a date table
- Implicit vs explicit measures
- DAX essentials: CALCULATE, FILTER, ALL, SUMX, DIVIDE, RELATED, and filter context vs row context
- Time intelligence: TOTALYTD, SAMEPERIODLASTYEAR, DATEADD, and year-over-year growth
- KPIs, hierarchies, and perspectives

- Cube functions (CUBEVALUE, CUBEMEMBER) for formula-driven reports
- **Lab:** Create a three-table model (Sales, Products, Calendar) and build measures for total sales, margin %, YTD sales, and YoY growth in a PivotTable

Module 4: What-If Analysis, Solver, and Forecasting (60 min)

- Goal Seek for single-variable problems
- One- and two-variable Data Tables for sensitivity analysis
- Scenario Manager and scenario summary reports
- Solver: objective, variables, constraints, and solving methods (Simplex LP, GRG Nonlinear)
- Forecasting: FORECAST.ETS, trendlines, and the Forecast Sheet tool
- Monte Carlo basics with RANDARRAY and simulation tables
- **Lab:** Build a pricing and production-mix model, use Solver to maximize profit under capacity limits, then run a sensitivity table on price and demand

Module 5: Automation with Macros and VBA Basics (40 min)

- Enabling the Developer tab, macro security, and saving as .xlsm
- Recording a macro and reading the generated code
- Editing code: variables, loops, If statements, and the Range object
- Making macros robust: avoiding Select, turning off screen updating, and basic error handling
- Assigning macros to buttons; introduction to Office Scripts and Power Automate as cloud-friendly alternatives
- **Lab:** Record a formatting-and-export macro, then edit it to loop through every sheet and save each as a PDF

Module 6: Dashboards, Auditing, and Capstone Wrap-Up (35 min)

- Dashboard design: layout, KPI cards, slicers and timelines connected to multiple PivotTables, and dynamic charts
- Advanced chart techniques: waterfall, histogram, Pareto, and sparklines
- Workbook auditing: Trace Precedents/Dependents, Evaluate Formula, Inquire add-in, and Watch Window
- Performance tuning: volatile functions, manual calculation mode, avoiding full-column references, and file size reduction
- Governance: version control, documentation tabs, sheet and workbook protection, and sharing options
- **Capstone (20 min):** Starting from a folder of raw files, deliver a refreshable Power Query pipeline feeding a Data Model, one DAX measure, and a PivotChart with a slicer
- **Wrap-up (15 min):** Share-outs, recap of key tools, post-training quiz, and feedback form

Materials Needed

- Start and solution workbooks for every lab
- Folder of 12 monthly CSV/Excel files plus product and calendar tables for Modules 2 and 3
- Capstone dataset (about 50,000 rows across multiple files)
- Cheat sheets: dynamic array functions, M and DAX quick reference, Solver settings

- Pre- and post-training quizzes

Assessment

- Pre/post quiz to measure improvement
- Lab completion checked by the trainer during rounds
- Capstone deliverable reviewed against a checklist: refreshes without errors, relationships correct, measures return expected values, dashboard readable

Trainer Tips

- Verify every participant's Excel build and that Power Pivot and the Developer tab are enabled before the session; this prevents the biggest time losses.
- Keep a "parking lot" for out-of-scope topics such as Power BI, advanced VBA classes, and SQL.
- Provide a fallback track for anyone without LAMBDA or newer array functions (INDEX/MATCH, SUMPRODUCT, and helper columns).
- Use short demos (5–10 minutes), then immediate hands-on practice; advanced topics stick through repetition.
- Prepare corrupted or messy files on purpose so participants practice troubleshooting, not just following steps.
- Mac users may need a Windows VM or shared machines for Power Pivot and VBA labs.