Excel VBA & Macros: Automate Your Spreadsheets

Learn to write VBA code and create macros for Excel automation, tailored for data analysts and office professionals.

Data Analytics Instructor: Kevin Breslin • 5 sections • 50 lessons • 16.25h total

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About this course

Many professionals spend countless hours on repetitive tasks in Excel, from data entry to report generation. This leads to inefficiency and increased risk of errors.

This course teaches you how to use Microsoft Excel VBA and macros to automate these processes. You'll learn through video lessons, real-world case studies, and step-by-step guides, moving from basic recording to advanced coding.

Course curriculum

Foundations and Preparation

- Introduction to VBA and Macros (12m)
  Get started with Visual Basic for Applications and learn what macros can do for your Excel workflow.
- Recording Your First Macro (15m)
  Step-by-step guide to recording a macro in Excel and understanding the generated VBA code.
- Navigating the VBA Editor (18m)
  Explore the VBA Integrated Development Environment, including the Project Explorer and Properties window.
- Understanding VBA Syntax Basics (20m)
  Learn core syntax elements like statements, operators, and how to write simple VBA code.
- Variables and Data Types (22m)
  Define variables, understand data types, and practice declaring them in VBA procedures.
- Simple Procedures and Modules (18m)
  Create Sub and Function procedures, and organize code using modules for better structure.
- Debugging Basics for Beginners (14m)
  Problem-solving session on identifying and fixing common errors in VBA code using debugging tools.

Core Concepts

- Conditional Statements with If...Then (16m)
  Implement decision-making in your code using If, ElseIf, and Else statements with practical examples.
- Looping with For...Next (18m)
  Automate repetitive tasks by using For loops to iterate through ranges and collections.
- Looping with Do While...Loop (15m)
  Apply Do loops for scenarios where the number of iterations is determined by a condition.
- Working with Arrays (20m)
  Use arrays to store and manipulate multiple values efficiently in VBA.
- Creating Sub Procedures (14m)
  Build reusable Sub procedures to group related tasks and simplify your macro code.
- Creating Function Procedures (17m)
  Design custom functions that return values, enhancing your Excel formulas with VBA.
- Error Handling Techniques (22m)
  Add error handling to your code to prevent crashes and manage unexpected issues gracefully.
- Managing Code with Modules (12m)
  Organize your VBA projects by using standard, class, and userform modules effectively.
- Commenting and Documentation (10m)
  Write clear comments and documentation to make your code maintainable and understandable.
- Practical Exercise: Building a Simple Automation (25m)
  Real case study where you combine core concepts to automate a basic Excel task end-to-end.

Deep Dive

- Understanding Excel Object Model (20m)
  Explore the hierarchy of Excel objects like Application, Workbook, and Range to control Excel programmatically.
- Manipulating Range Objects (24m)
  Learn techniques to select, modify, and format ranges using VBA for dynamic data manipulation.
- Working with Cells and Values (18m)
  Access and change cell values, formulas, and properties through practical code examples.
- Worksheet Operations in VBA (16m)
  Automate adding, deleting, renaming, and copying worksheets within your workbooks.
- Workbook Management and Events (22m)
  Handle workbook events like Open and Close, and manage multiple workbooks in your VBA projects.
- Formatting with VBA (15m)
  Apply fonts, colors, borders, and number formats to cells and ranges automatically.
- Working with Charts via VBA (25m)
  Create, modify, and update charts dynamically using VBA code for data visualization.
- Case Study: Automating Data Import (30m)
  Real-world project to import data from external sources like CSV files and process it in Excel.

Advanced Application

- Designing UserForms for Input (28m)
  Build custom dialog boxes with UserForms to collect user input and control macro behavior.
- Advanced UserForm Controls (22m)
  Use controls like listboxes, combo boxes, and buttons to create interactive forms.
- Connecting to External Data Sources (30m)
  Set up VBA to pull data from databases, text files, or web sources for integration.
- API Calls and Windows Functions (32m)
  Extend VBA capabilities by calling Windows API functions for system-level tasks.
- Automating Outlook from Excel (25m)
  Send emails, create appointments, and manage Outlook items directly from your Excel macros.
- Advanced Error Handling and Logging (18m)
  Implement detailed error logging and recovery strategies for production-ready code.
- Optimizing VBA Code Performance (20m)
  Tips and techniques to speed up your macros, including turning off screen updating and using arrays.
- Creating Add-ins for Excel (24m)
  Package your VBA projects as reusable add-ins to distribute functionality across teams.
- Dynamic Chart Generation (26m)
  Generate charts based on changing data sets automatically using VBA code.
- Real-time Data Processing (28m)
  Handle streaming or frequently updated data with VBA for dashboards and monitoring.
- Security and Protection in VBA (15m)
  Protect your code and workbooks with passwords, digital signatures, and trust settings.

- Project: Building a Dashboard Automation (35m)
  Hands-on project to create an automated dashboard that updates data and visuals on demand.

Implementation & Next Steps

- Planning a Macro Project (16m)
  Define objectives, outline steps, and structure your VBA project before writing code.
- Step-by-Step Project: Data Cleaning Automation (30m)
  Automate cleaning messy data in Excel, including removing duplicates and standardizing formats.
- Step-by-Step Project: Report Generation (28m)
  Build a macro to compile data, apply formatting, and generate a polished report automatically.
- Debugging Complex Code (22m)
  Advanced debugging sessions to trace issues in multi-module VBA projects using breakpoints and watches.
- Testing and Validation Strategies (18m)
  Develop test cases and validation checks to ensure your macros work correctly across scenarios.
- Best Practices for VBA Development (14m)
  Adopt coding standards, naming conventions, and project organization for maintainable code.
- Maintaining and Updating Code (12m)
  Strategies for updating your VBA projects as requirements change or Excel versions evolve.
- Integrating VBA with Power Query (20m)
  Combine VBA with Power Query for advanced data transformation and automation workflows.
- Exploring Advanced VBA Libraries (15m)
  Introduction to external libraries and resources to extend VBA functionality further.
- Community Resources and Forums (10m)
  Find help, share knowledge, and stay updated through online communities and documentation.
- Continuous Learning Paths (12m)
  Outline next steps in learning, such as specialized topics or related technologies.
- Final Review and Course Summary (8m)
  Recap key concepts, review lessons, and assess your progress through the course.
- Next Steps in Excel Automation (14m)
  Explore future trends and how to apply your VBA skills in evolving professional contexts.