

# Google Sheets, Apps Script, and AI-Powered Workspace Automation

## Course Duration

3 Days / 24 Hours

## Course Description

This course teaches participants how to analyze data in Google Sheets, write Google Apps Script code, use Gemini as a productivity and coding assistant, and automate workflows across Google Sheets, Forms, Gmail, Docs, Drive, and Calendar.

The core hands-on activities can be completed using a free Google account. Gemini-based activities are optional where access is limited.

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## Prerequisites

Participants should have:

- Basic knowledge of Google Sheets or Microsoft Excel.
  - Understanding of formulas, rows, columns, files, and folders.
  - A free Google account with access to Sheets, Docs, Drive, Gmail, Forms, and Calendar.
  - Willingness to write simple code; no Apps Script, advanced JavaScript, paid Workspace, or Gemini Premium subscription is required.
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## Course Modules

### Module 1: Introduction to Google Workspace Automation

#### Topics

- Google Workspace, Apps Script, and cloud automation overview.
- Google Sheets, Docs, Forms, Gmail, Drive, and Calendar use cases.
- Apps Script vs Excel VBA.
- Free account capabilities, limitations, and course roadmap.

## Hands-on Exercise

- Create the course workspace and sample practice files.
  - Review the final project flow across Sheets, Docs, Drive, Gmail, and Apps Script.
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## Module 2: Google Sheets Fundamentals

### Topics

- Sheets interface, rows, columns, cells, and ranges.
- Data types, formatting, sorting, and filtering.
- Data validation, conditional formatting, and named ranges.
- Sharing, collaboration, and version history.

### Hands-on Exercise

- Create and format a structured business dataset.
  - Apply validation, filtering, and conditional formatting.
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## Module 3: Essential Formulas and Functions in Google Sheets

### Topics

- Basic formulas, references, and error handling.
- Text, date, time, and logical functions.
- Lookup, array, and useful business formulas.
- Formula design and best practices.

### Hands-on Exercise

- Build a formula-based business tracker.
  - Clean, classify, summarize, and validate data.
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## Module 4: Data Analysis and Business Modelling in Google Sheets

### Topics

- Data cleaning, summary tables, and pivot tables.
- Charts, dashboards, and visual analysis.
- Descriptive statistics, trends, and correlation.
- Forecasting, regression basics, and business interpretation.

## Hands-on Exercise

- Build a business analysis dashboard.
  - Perform basic trend, correlation, and forecasting analysis.
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## Module 5: Gemini Orientation for Productivity

### Topics

- Generative AI and Gemini overview.
- Gemini for formulas, reports, data interpretation, and automation ideas.
- Prompt writing and AI output verification.
- Responsible AI use with free-account-friendly options.

### Hands-on Exercise

- Use AI to explain formulas and suggest automation ideas.
  - Improve and validate a short business report summary.
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## Module 6: Introduction to Google Apps Script

### Topics

- Apps Script overview, use cases, and project types.
- Script editor, execution, authorization, and logs.
- Logger basics and script testing.
- Apps Script and Excel VBA comparison.

### Hands-on Exercise

- Create an Apps Script project from Google Sheets.
  - Run a simple function, view logs, and write data to Sheets.
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## Module 7: Apps Script Programming Fundamentals

### Topics

- Variables, constants, data types, and operators.
- Functions, parameters, return values, and conditions.
- Loops, arrays, objects, and template literals.
- Comments, debugging, and `try...catch` basics.

## Hands-on Exercise

- Write reusable business calculation functions.
  - Process multiple records and handle invalid data.
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## Module 8: Automating Google Sheets with Apps Script

### Topics

- `SpreadsheetApp`, spreadsheets, sheets, and ranges.
- Reading, writing, and updating sheet data.
- Cleaning, formatting, sorting, and creating sheets.
- Generating summary outputs automatically.

### Hands-on Exercise

- Automate raw data cleanup and formatting.
  - Update status columns and generate a summary sheet.
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## Module 9: Custom Menus, Buttons, and User Interaction

### Topics

- Custom menus and the `onOpen()` trigger.
- Assigned buttons, alerts, prompts, and confirmations.
- User-friendly automation controls.
- Designing workflows for non-technical users.

### Hands-on Exercise

- Create a custom menu with automation options.
  - Assign an Apps Script function to a button.
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## Module 10: Writing Apps Script Code Using Gemini

### Topics

- Gemini for code generation, explanation, and debugging.
- Gemini for code improvement and VBA-to-Apps-Script conversion.
- Prompting techniques for reliable Apps Script output.
- Reviewing, testing, and fixing AI-generated code.

## Hands-on Exercise

- Generate a simple Apps Script function using AI.
  - Explain, test, fix, and improve the generated code.
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## Module 11: Trigger-Based Automation

### Topics

- Simple, installable, open, edit, form submit, and time-driven triggers.
- Trigger limitations and duplicate prevention.
- Trigger-based workflow design.
- Automation logging.

### Hands-on Exercise

- Create an `onEdit` or form submit workflow.
  - Track trigger activity in an automation log.
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## Module 12: Google Forms and Response Automation

### Topics

- Creating Forms and linking responses to Sheets.
- Processing submissions and generating unique IDs.
- Updating statuses and sending confirmations.
- Simple approval workflow design.

### Hands-on Exercise

- Build a registration or feedback form automation.
  - Process responses, generate IDs, and send confirmation emails.
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## Module 13: Gmail Automation

### Topics

- `MailApp`, `GmailApp`, and Gmail automation basics.
- Plain-text, HTML, personalized, and template-based emails.
- CC, BCC, attachments, and PDF delivery.
- Email quotas and responsible automation practices.

### Hands-on Exercise

- Send personalized emails from Sheets.
  - Create a reusable email template with a PDF attachment.
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## Module 14: Google Docs, PDF, and Drive Automation

### Topics

- Docs templates, placeholders, and template copying.
- Placeholder replacement and personalized document generation.
- PDF export and dynamic file naming.
- Drive folders, file saving, and document archives.

### Hands-on Exercise

- Generate a report or certificate from a Docs template.
  - Export it as PDF and save it in Drive.
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## Module 15: Google Calendar and External Data Automation

### Topics

- Calendar events, invites, reminders, and event details from Sheets.
- API basics and `UrIFetchApp`.
- GET requests and JSON responses.
- Writing external data into Sheets.

### Hands-on Exercise

- Create calendar events from a Sheets schedule.
  - Fetch public API data and write it to Sheets.
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## Module 16: Capstone Project: Automated Data Analysis and Reporting System

### Topics

- Raw data preparation, cleaning, and summary analysis.
- Charts, analysis outputs, and Docs report template.
- PDF export, Drive storage, and email delivery.
- Automation logs and optional Gemini executive summary.

## Hands-on Exercise

- Build a complete reporting automation using Sheets, Apps Script, Docs, Drive, and Gmail.
  - Generate, save, email, and log the final PDF report.
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## Course Outcomes

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

- Analyze data in Google Sheets and apply basic modelling techniques.
- Write Apps Script code and use Gemini for productivity and coding support.
- Automate Sheets, Forms, Gmail, Docs, Drive, and Calendar workflows.
- Generate reports, PDFs, and an end-to-end reporting automation using a free Google account.