



Session 1: Advanced Tools and Features in Excel

Objective: By the end of this session, students will be able to:

- Understand and manage Excel Add-ins to extend functionality.
- Create and customize charts to visualize data effectively.
- Record and apply macros to automate repetitive tasks.
- Link workbooks to enable dynamic data sharing.
- Initiate a professional data analytics portfolio on GitHub, Maven Analytics, and LinkedIn, showcasing Session 1 skills for final exams and career preparation.

Duration: 2 hours

Reference: Data Analysis with MS Excel (Session 1)

Context: This session covers all topics from Session 1 of the *Data Analysis with MS Excel* book, as specified in the OV-1501 curriculum, ensuring readiness for final exams. It introduces advanced Excel tools and establishes a foundation for Sessions 2 and 3, as well as future Power BI, Python, and SQL integration in students' data analytics portfolios. All examples, exercises, and portfolio tasks are designed to reinforce exam-relevant skills and demonstrate professional capabilities from the start.

Step-by-Step Explained Examples

1. Understanding Add-ins

Concept: Add-ins extend Excel's functionality with specialized tools (e.g., Analysis ToolPak for statistical analysis, Solver for optimization).

Example 1: Enabling Analysis ToolPak

1. **Prepare Excel:**
 - Open a new Excel workbook, name it "Addins_Charts.xlsx".
2. **Enable Add-in:**

- Go to **File > Options > Add-ins**.
 - In the **Manage** dropdown, select **Excel Add-ins**, click **Go**.
 - Check **Analysis ToolPak**, click **OK**.
3. **Test:**
 - Go to **Data** tab; verify **Data Analysis** appears in the Analysis group.
 4. **Sample Output:**
 - Screenshot of **Data** tab showing **Data Analysis** button.
 5. **Use Case:**
 - In Sheet1, enter:
| A1: Sales (\$) | A2:A5: 1000, 1500, 2000, 1200 |
 - Go to **Data > Data Analysis > Descriptive Statistics**, select A2:A5, output to a new sheet.
 - Result: Summary statistics (mean, median, etc.).
 6. **Expected Output:** A table with stats like Mean = 1425, Standard Deviation \approx 408.25.
 7. **Save:** Update "Addins_Charts.xlsx".

Example 2: Enabling Solver Add-in

1. **Prepare Excel:**
 - Use the same workbook.
2. **Enable Add-in:**
 - Go to **File > Options > Add-ins**, select **Excel Add-ins**, click **Go**.
 - Check **Solver Add-in**, click **OK**.
3. **Test:**
 - Go to **Data** tab; verify **Solver** appears.
4. **Sample Output:** Screenshot of **Data** tab with **Solver** button.
5. **Save:** Update "Addins_Charts.xlsx".

Why it matters: Add-ins unlock advanced analytical capabilities, essential for data analytics tasks.

2. Creating and Using Charts

Concept: Charts visualize data trends, making insights accessible and impactful.

Example 1: Column Chart for Regional Sales

1. **Prepare Data:**

- In Sheet1, enter:

A1: Region	B1: Sales (\$)
North	8000
South	6000
East	9000
West	7000

2. **Create Chart:**

- Select A1:B5, go to **Insert > Column Chart > 2-D Clustered Column**.
- Add chart elements:
 - **Chart Title:** “Regional Sales Performance”.
 - **Axis Titles:** X-axis: “Region”, Y-axis: “Sales (\$)”.
 - **Data Labels:** Add to show values (e.g., 8000 above North bar).
- Customize:
 - Change bar colors to blue shades.
 - Adjust font size of title to 14.

3. **Test:**

- Verify East (9000) has the tallest bar, South (6000) the shortest.

4. **Sample Data Table:**

Region	Sales (\$)
North	8000
South	6000
East	9000
West	7000

5. **Expected Output:** A column chart with four blue bars, labeled axes, and data values displayed.

6. **Save:** Update “Addins_Charts.xlsx”.

Example 2: Pie Chart for Product Distribution

1. Prepare Data:

- In Sheet2, enter:

A1: Product	B1: Units Sold
Laptop	200
Tablet	150
Phone	100

2. Create Chart:

- Select A1:B4, go to **Insert > Pie Chart > 2-D Pie**.
- Add:
 - **Chart Title:** “Product Sales Distribution”.
 - **Data Labels:** Show percentage and category name.
- Customize:
 - Use a bright color scheme (e.g., red for Laptop, blue for Tablet).
 - Explode the “Phone” slice for emphasis.

3. Test:

- Verify Laptop shows ~44.4%, Tablet ~33.3%, Phone ~22.2%.

4. **Expected Output:** A pie chart with three colored slices, percentages labeled, and Phone slice slightly separated.

5. **Save:** Update “Addins_Charts.xlsx”.

Why it matters: Charts transform raw data into actionable insights, a core skill for data analysts.

3. Working with Macros

Concept: Macros automate repetitive tasks by recording and replaying actions.

Example 1: Macro to Format Headers

1. **Prepare Worksheet:**

- In Sheet1, enter A1:B1: “Region”, “Sales (\$)” (from Example 1).

2. **Record Macro:**

- Go to **View > Macros > Record Macro**.
- Name: “FormatHeader”, store in “This Workbook”.
- Select A1:B1, apply:
 - Bold font.
 - Blue fill background.
 - Center alignment.
- Go to **View > Macros > Stop Recording**.

3. **Test:**

- In Sheet3, enter C1:D1: “Category”, “Budget”.
- Run macro: **View > Macros > FormatHeader > Run**.
- Verify C1:D1 is bold, blue-filled, centered.

4. **Expected Output:** Headers formatted consistently across sheets.

5. **Save:** Save as “Addins_Charts_MACRO.xlsm” (macro-enabled).

Example 2: Macro to Clear Formatting

1. **Prepare Worksheet:**

- Use Sheet1 with formatted headers.

2. **Record Macro:**

- Name: “ClearFormat”, store in “This Workbook”.
- Select A1:B5, go to **Home > Clear > Clear Formats**.
- Stop recording.

3. **Test:**

- Apply random formatting to A2:B5, run **ClearFormat**.
- Verify formatting is removed, data remains.

4. **Expected Output:** Data table without formatting.

5. **Save:** Update “Addins_Charts_MACRO.xlsm”.

Why it matters: Macros save time and ensure consistency in repetitive tasks.

4. Linking Workbooks

Concept: Linking workbooks enables dynamic data sharing across files, updating calculations automatically.

Example 1: Linking Sales Data

1. Prepare Source Workbook:

- Create a new workbook, name it “Sales_Source.xlsx”.
- In Sheet1, enter:

A1: Month	B1: Revenue (\$)
Jan	10000
Feb	12000
Mar	11000

2. Link in Target Workbook:

- In “Addins_Charts.xlsx”, Sheet3, enter A1: “**Feb Revenue**”.
- In B1, enter: `=[Sales_Source.xlsx]Sheet1!B2`.

3. Test:

- Open both workbooks; B1 should display 12000.
- In “Sales_Source.xlsx”, change Feb to 13000; verify B1 updates.

4. Sample Data Table (Source):

Month	Revenue (\$)
Jan	10000
Feb	13000
Mar	11000

5. **Expected Output:** B1 dynamically shows Feb’s revenue.

6. **Save:** Update both workbooks.

Example 2: Linking Budget Data

1. Prepare Source Workbook:

- Create “Budget_Source.xlsx” with:

A1: Department	B1: Budget (\$)
HR	5000
IT	7000

2. Link in Target Workbook:

- In “Addins_Charts.xlsx”, Sheet4, enter A1: “**IT Budget**”.
- In B1, enter: `= [Budget_Source.xlsx]Sheet1!B2` .

3. Test:

- Change IT budget to 7500 in “Budget_Source.xlsx”; verify B1 updates.

4. Expected Output: B1 shows 7500.

5. Save: Update both workbooks.

Why it matters: Linking ensures real-time data consistency across multiple files.

Classwork: Hands-On Practice

Objective: Master all Session 1 topics through practical exercises for exam preparation.

1. Enable Analysis ToolPak-VBA Add-in (10 minutes):

- Enable **Analysis ToolPak - VBA** add-in.
- Test: Verify **Data Analysis** in **Data** tab.
- Write 2 sentences on its use (e.g., “It supports advanced VBA statistical functions. Useful for custom data analysis.”).
- Save screenshot in “Session1_Work.xlsx”.

2. Enable Solver Add-in (10 minutes):

- Enable **Solver** add-in.
- Test: Verify **Solver** in **Data** tab.
- Write 2 sentences on its use (e.g., “Solver optimizes resource allocation. Ideal for budgeting scenarios.”).

3. Create a Column Chart (15 minutes):

- Enter:

A1: Store	B1: Revenue (\$)
Downtown	15000
Uptown	12000
Midtown	10000

- Create a column chart, title: “Store Revenue”, add axis titles, data labels.
- Customize: Use red bars.
- Save in “Session1_Work.xlsx”.

4. **Create a Pie Chart** (15 minutes):

- Enter:

A1: Category	B1: Expenses (\$)
Rent	3000
Utilities	1000
Supplies	2000

- Create a pie chart, title: “Expense Breakdown”, add percentage labels.
- Explode “Utilities” slice.
- Save in “Session1_Work.xlsx”.

5. **Record a Macro for Table Formatting** (10 minutes):

- Record a macro “StyleTable” to:
 - Bold A1:C1.
 - Apply green fill.
 - Center-align.
- Test on a new table (e.g., D1:E1: “Product”, “Price”).
- Save as “Session1_Work_MAC.xlsx” (macro-enabled).

6. **Record a Macro to Reset Formatting** (10 minutes):

- Record “ResetStyle” to clear formatting in A1:C5.
- Test on formatted data.
- Save in “Session1_MAC.xlsx”.

7. **Link Workbooks** (15 minutes):

- Create “External_Data.xlsx” with:

A1: Quarter	B1: Profit (\$)
Q1	2000
Q2	3000

- In “Session1_Work.xlsx”, link to Q2 profit.
- Test: Change Q2 to 3500, verify update.
- Save both workbooks.

Submission: Save all files in a folder named “Session1_Work_[YourName]”.

Test: Assessment

Objective: Assess mastery of Session 1 topics for final exam preparation.

Duration: 20 minutes

Instructions: Complete tasks in “Session1_Test_[YourName].xlsx”.

1. **Enable Add-in** (3 points):

- Enable **Analysis ToolPak**.
- Paste screenshot of **Data** tab.
- Write 1 sentence on its use.

2. **Create Column Chart** (4 points):

- Enter:

A1: Product	B1: Sales (\$)
Book	5000
Pen	2000
Notebook	3000

- Create a column chart, title: “Product Sales”, add axis titles, data labels.

3. **Create Pie Chart** (4 points):

- Enter:

A1: Region	B1: Units
East	400
West	300
South	200

- Create a pie chart, title: “Unit Distribution”, add percentage labels.

4. **Record Macro** (4 points):

- Record “HeaderStyle” to bold and yellow-fill A1:B1.
- Test on C1:D1.
- Save as “Session1_Test_MAC.xlsm”.

5. **Link Workbook** (5 points):

- Create “Test_Source.xlsx”:

A1: Item	B1: Cost (\$)
Chair	100
Table	150

- In “Session1_Test.xlsx”, link to Table’s cost.
- Test: Change cost to 160, verify update.

Grading Criteria:

- Correctness: 15 points.
- Formatting and clarity: 5 points.
- Timely submission: 5 points.

Portfolio-Building Task: Launching Your Data Analytics Portfolio

Objective: Create an Excel project showcasing all Session 1 topics, hosted on **GitHub**, **Maven Analytics**, and **LinkedIn**, to prepare for final exams and establish a professional

portfolio.

Instructions:

1. **Create GitHub Repository** (15 minutes):

- Create a new repository named “Data-Analytics-Portfolio-[YourName]” on [GitHub](#).
- Initialize with a [README.md](#), including sections:
 - **About:** “This portfolio showcases my data analytics skills in Excel, with plans for Power BI, Python, and SQL.”
 - **Excel Projects:** Placeholder for session projects.
- Create a folder “Session1_Excel”.

2. **Create Excel Portfolio Artifact** (40 minutes):

- In a new workbook named “Portfolio_Session1_[YourName].xlsx”, create:
 - **Sheet 1: Sales Analysis Dashboard**
 - Create a table:

A1: Store ID	B1: Store Name	City	Revenue (\$)
S001	Store A	New York	20000
S002	Store B	Chicago	15000
S003	Store C	Los Angeles	18000

- Create a **Column Chart**:
 - Select A1:D4, insert a 2-D Clustered Column chart.
 - Title: “Store Revenue Analysis”.
 - Axis titles: “Store ID” (X), “Revenue (\$)” (Y).
 - Add data labels.
 - Use green bars.
- Below the chart, write: “This chart visualizes revenue across stores, with New York’s Store A leading at \$20,000.”
- Create a **Pie Chart**:
 - Select A1:A4, D1:D4, insert a 2-D Pie chart.
 - Title: “Revenue Distribution by Store”.
 - Add percentage labels.
 - Explode “Chicago” slice.
- Write: “The pie chart shows Store A contributes 40% of total revenue.”

- **Sheet 2: Automation with Macros**

- Copy the table from Sheet 1.
- Record a macro “FormatDashboard” to:
 - Bold A1:D1.
 - Apply blue fill to headers.
 - Center-align A1:D4.
- Test macro on a new table (e.g., E1:F1: “Product”, “Price”).
- Paste screenshot of macro execution (before/after).
- Write: “This macro automates table formatting, enhancing efficiency in dashboard creation.”

- **Sheet 3: Linked Data Integration**

- Create “Sales_External.xlsx” with:

A1: Store ID	B1: Profit (\$)
S001	5000
S002	4000
S003	4500

- In Sheet 1, add E1: **Profit (\$)**, link E2:E4 to “Sales_External.xlsx” (e.g., `=[Sales_External.xlsx]Sheet1!B2`).
- Write: “Linked profits update dynamically, ensuring real-time analysis.”

- **Sheet 4: Add-ins Overview**

- Enable **Analysis ToolPak** and **Solver**.
- Paste screenshots of **Data** tab showing both.
- Use Analysis ToolPak to generate descriptive statistics for Revenue (D2:D4).
- Paste stats table (e.g., Mean = 17666.67).
- Write: “Add-ins like Analysis ToolPak provide statistical insights, while Solver supports optimization.”

- **Sheet 5: Reflection**

- Write (5–6 sentences): “Session 1 introduced me to advanced Excel tools like add-ins, charts, macros, and workbook linking, laying a strong foundation for data analytics. Creating charts and dashboards enhances my ability to communicate insights visually. Macros streamline repetitive tasks, saving time in real-world scenarios. Linking workbooks ensures data

consistency across files. This portfolio project demonstrates my exam readiness and prepares me for Power BI, Python, and SQL integration in future sessions.”

3. Upload to GitHub (15 minutes):

- Upload “Portfolio_Session1_[YourName].xlsx” and “Sales_External.xlsx” to “Session1_Excel”.
- Update [README.md](#):
 - Heading: “Advanced Excel: Session 1 Project”.
 - Description: “This project showcases add-ins, charts, macros, and workbook linking. The sales analysis dashboard visualizes store performance, automates formatting, and integrates external data.”
 - Screenshots of column and pie charts.
 - Links to download Excel files.

4. Create Maven Analytics Portfolio (15 minutes):

- Sign up/log in at mavenanalytics.io.
- Create a project: “Advanced Excel: Sales Analysis Dashboard”.
- Upload screenshots of column chart, pie chart, and stats table.
- Description: “This Session 1 project from OV-1501 demonstrates Excel add-ins, chart creation, macro automation, and workbook linking for a sales dashboard, showcasing foundational analytics skills.”
- Save and copy the portfolio link.

5. Share on LinkedIn (10 minutes):

- Post: “Kicking off my data analytics journey with Advanced Excel! Built a sales analysis dashboard with charts, macros, add-ins, and linked workbooks. Check my portfolio on GitHub: [Insert GitHub link] and Maven Analytics: [Insert Maven link]. Ready for Power BI, Python, and SQL next! #DataAnalytics #Excel #Portfolio”
- Attach the column chart screenshot.

Submission:

- Submit GitHub repository URL, Maven Analytics portfolio link, and LinkedIn post link.
- Save “Portfolio_Session1_[YourName].xlsx” and “Sales_External.xlsx”.

Why it matters:

- **GitHub:** Establishes a technical portfolio for Excel, scalable for Power BI, Python, and SQL projects.

- **Maven Analytics:** Builds credibility in the analytics community.
 - **LinkedIn:** Enhances visibility to recruiters.
 - This project covers all Session 1 topics, ensuring exam readiness and professional appeal.
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Resources:

- **eBook:** Data Analysis with MS Excel (Session 1).
- **OnlineVarsity:** Learner's Guide, Glossary, Practice 4 Me.
- **References:** Data Analysis with Microsoft Excel by Kenneth N. Berk.
- **Platforms:**
 - GitHub: github.com
 - Maven Analytics: mavenanalytics.io
 - LinkedIn: linkedin.com

Next Steps:

- Review Try It Yourself questions from Session 1.
- Prepare for Session 2 (Data Validation and Conditional Formatting).