

Detailed Instructions for Installation of metRology for Microsoft Excel

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Basics

- metRology for Microsoft Excel requires the open-source statistical software R. If you do not already have R on your computer, the installation file will take you to the correct link to install it.
- Alternatively save the file at <http://cran.rstudio.com/bin/windows/base/release.htm> and then double click it to install R.
- You can accept all of the default suggestions when you run the R install script.

Basics Continued

- After installing R, double click on the file `metRology-for-Microsoft-Excel-v1-03-setup.exe` to configure R and install the user interface.
- You should use the defaults throughout this install as well, with the exception that you can override the suggested installation directory if desired.

Configuring Excel

- When you install **metRology for Microsoft Excel**, the installation script will most likely open Excel during the install and a menu will appear that asks you to enable content or macros.
- Please click enable to allow installation of the Excel Add-in used to link Excel and R.
- After you enable the content, Excel will close automatically and the installation will finish.

Testing the Software

- After completing the installation first reboot your computer and then you can run a test to make sure everything is working using one of the versions of the file

[test-metRology-for-Microsoft-Excel.xls\(m\)](#).

- use the [xls](#) file if you have Excel 2003
 - use the [xlsm](#) file if you have Excel 2007 or 2010
- To complete the test open the appropriate test file with Excel, then click the button labeled “Compute Uncertainty”. You should also see a menu item named “metRology” on the menu bar.

Test File – Push Button Circled in Red

The screenshot displays the Microsoft Excel interface with the file "test-metRology-for-Microsoft-Excel.xlsm" open. The ribbon is set to "metRology". The spreadsheet contains a GUM Uncertainty Analysis template for one input. The input table is as follows:

Uncertainty Analysis Input Table	
Input Variable Name	x1
Units	mg
Input Value, x_i	1.0000
Standard Uncertainty, u_i	0.0120
Degrees of Freedom, ν_i	60.0
Type of Uncertainty Evaluation	A
Distribution	Normal
Measurement Equation	exp(x1)

The "Compute Uncertainty" button is circled in red. Below the input table is the "Uncertainty Analysis Results" section:

Output Value	Combined Standard Uncertainty	Effective Degrees of Freedom	Nominal Level of Confidence	Coverage Factor =	Expanded Uncertainty	Approximate Attained Confidence Level
$y=f(x_1, \dots, x_p)$	$u_c(y)$	ν_{eff}	100(1- α)%	k	U(y)	

Additional rows in the results section include "Contribution to $[u_c(y)]^2$, %", "Sensitivity Coefficient", and a "More" button. The status bar at the bottom shows "GUM Template 1 Input" and "Ready".

Successful Test Results

The screenshot displays the Microsoft Excel interface for the 'metRology' template. The 'metRology' tab is highlighted with a red circle. The spreadsheet contains an 'Uncertainty Analysis Input Table' and an 'Uncertainty Analysis Results' table. The results table is also circled in red, indicating a successful test.

Uncertainty Analysis Results							
Output Value	Combined Standard Uncertainty	Effective Degrees of Freedom	Nominal Level of Confidence	Coverage Factor = Student's t	Expanded Uncertainty	Approximate Attained Confidence Level	
$y=f(x_1, \dots, x_p)$	$u_c(y)$	ν_{eff}	$100(1-\alpha)\%$	k	$U(y)$		
2.718	0.0326	60.0	95%	2.00	0.065	93.7%	
x_1							
Contribution to $[u_c(y)]^2$, %	100.0%						
Sensitivity Coefficient	2.7183						

Additional information from the spreadsheet:

- Input Table:**
 - Input Variable Name: x_1
 - Units: mg
 - Input Value, x_1 : 1.0000
 - Standard Uncertainty, u_1 : 0.0120
 - Degrees of Freedom, ν_1 : 60.0
 - Type of Uncertainty Evaluation: A
 - Distribution: Normal
 - Measurement Equation: $\exp(x_1)$
- Warnings:** No errors or warnings.

More on Test Results and Final Notes

- The numbers in the output area of the test file do not need to match the screenshot exactly
- As long as there are numbers and no apparent errors, all should be well