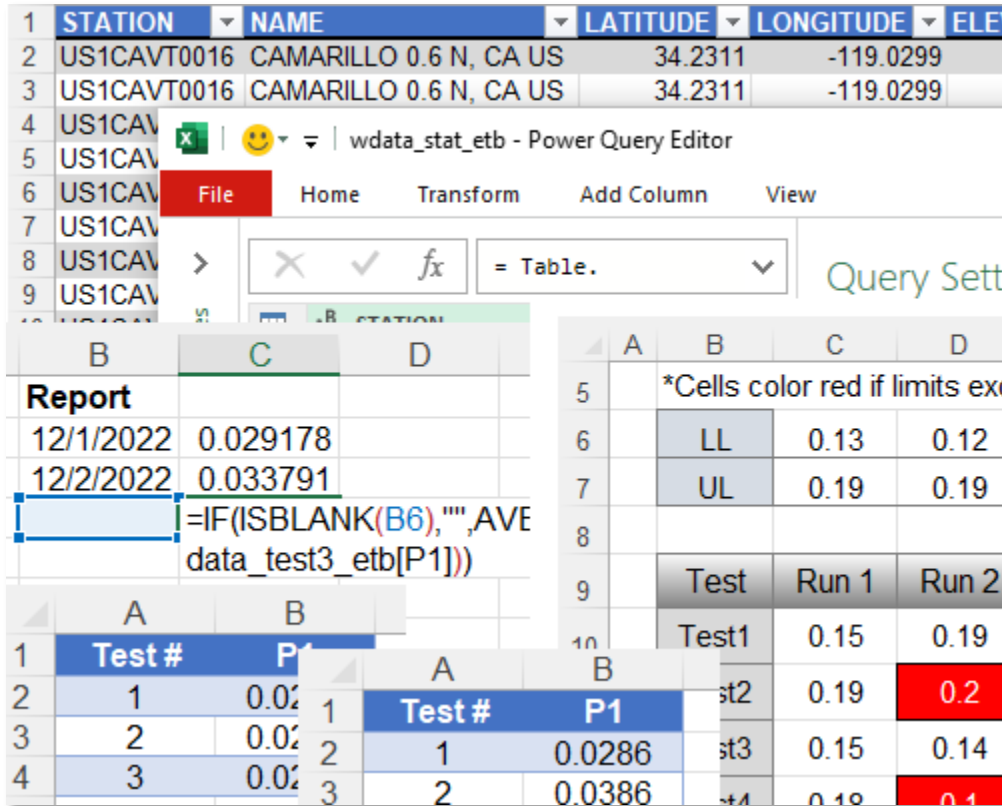


For a video presentation of our class, please visit
https://emagenit.com/excel_data_analysis_engineer.htm >
 Questions? 1.805.498.7162

Excel Data Analysis for Engineers and Scientists



The screenshot displays an Excel spreadsheet with several data tables and a Power Query Editor window. The main spreadsheet contains a table with columns B, C, and D, and a formula bar showing the formula: `=IF(ISBLANK(B6),"",AVERAGE(data_test3_etb[P1]))`. The Power Query Editor window shows a table with columns A, B, C, and D, and a formula bar showing the formula: `= Table.`. The spreadsheet also shows a table with columns A and B, and a table with columns A, B, C, and D. The table with columns A, B, C, and D has the following data:

A	B	C	D
5	*Cells color red if limits exc		
6	LL	0.13	0.12
7	UL	0.19	0.19
8			
9	Test	Run 1	Run 2
10	Test1	0.15	0.19
	st2	0.19	0.2
	st3	0.15	0.14
	st4	0.19	0.1

The table with columns A and B has the following data:

A	B
1	Test # P1
2	1 0.02
3	2 0.02
4	3 0.02

The table with columns A, B, C, and D has the following data:

A	B	C	D
1	Test #	P1	
2	1	0.0286	
3	2	0.0386	

Unleash Excel's data abilities and rapidly automate multi-step engineering and science reports! Learn to combine Excel's external querying abilities, functions, and data tools to quickly build automated report tools that integrate, analyze, and chart data.

How our class can help you.

Our 1-day class shows you how to take command of Excel's data tools, functions, and charts and use them to rapidly process and visualize engineering and science data.

It covers essential topics like how to use functions, logic, charts, PivotTables, and various data filters to process your data.

Also discussed are unique topics like how to combine text values, parse date-times like milliseconds, curve fit chart data, and build array formulas to analyze complex datasets and lookups.

You'll also discover how to use Power Query and Excel tables to create reports that automatically import data, shape it, calculate it, and chart it at the click of a refresh button.

Join us and our class will show you how to quickly combine Excel's critical data elements into tools that will save you time and effort.

Key Excel topics covered in class.

- Data analysis formula design, cell naming, and worksheet linking review
- Using Excel's Filters, Sort, Slicers, Analysis Toolpak, and Excel tables to rapidly filter and process data
- Using Conditional Formatting to automatically flag worksheet data based on logic
- Controlling worksheet data entry and creating cell drop downs using Data Validation
- Creating charts, curve fits, and using Slicers to control chart views
- Creating key math, trig, date time, and statistical worksheet functions to analyze data
- Using Excel table structured references to create adaptive formulas
- Looking up data in worksheet tables using the VLOOKUP, XLOOKUP, INDEX... functions
- Using logic functions like SUMIFS, COUNTIFS, IF, AND... to summarize, count, and analyze worksheet data
- Importing text files with Text Wizard and analyzing worksheet text with functions like LEFT, MID, CLEAN...
- Building array formulas to analyze complex engineering and science data patterns

- How to use PivotTables and Pivot Charts to process, summarize, and visualize data
- How to use Power Query to import and shape (i.e., filter, sort, delete, clean...) data automatically
- Creating dynamic reports by linking Excel to Word and PowerPoint

Excel skills needed for the class.

Select this Excel training if you or your group have:

- Controlled workbooks, worksheets, and entered worksheet data
- Copied and pasted worksheet data
- Performed basic cell formatting tasks like coloring a cell, bolding, aligning,...
- Used cell and range references like A1 or A1:A10 in formulas
- Built formulas like $=.5*0.002377 *A1^2$
- Used basic worksheet functions like SUM, MAX, MIN...

Who should attend?

- Engineers, scientists, and technicians. Class examples determined by those in attendance.

How we run the class.

We focus our training on what our customers need. When training begins, we analyze those needs and shift our outline appropriately. We will stress topics or add topics that our customers want. No two training sessions are ever the same with EMAGENIT.

Detailed class syllabus.

Data Analysis Problem Construction on the Worksheet

- Using relative, mixed, and absolute cell references along with various operators to build analysis formulas
- How to use relative and mixed references to drag and fill formulas in 1-d and 2-d data tables
- How Excel really stores text, numbers, and dates in cells and how they affect functions and formulas

- Using cell and range names in your formulas to easily track problem inputs and data
- How to efficiently pass data between worksheets and workbooks using cell references and names
- Building simple logic formulas to analyze data using the relational operators: <, >, <=, >=, < >, =

Building Tables, Filtering / Sorting Data, and Using the Analysis Toolpak

- The difference between an Excel table and a regular worksheet table
- The 4 basic construction rules for worksheet and Excel tables, primary and foreign key discussion
- Using Sort, AutoFilter, and Advanced Filter in unique ways to sort and filter worksheet data for reports
- How to use Copy / PasteSpecial to paste select parts of filtered data to a new report worksheet
- Using the Remove Duplicates feature to retrieve unique values from a column
- Using an Excel table's quick analysis tools and slicers to rapidly filter and calculate data
- What is in the Analysis Toolpak and how to use its tools like moving average, regression analysis, sampling... (optional discussion)

Using Conditional Formatting / Data Validation to Flag and Control Data

- Why control what a user types in a data table or form?
- Using Data Validation to create cell drop down lists and control number, date, and text entry in your data
- What is Conditional Formatting and how is it used to automatically flag worksheet data based on logic?
- Setting up a Conditional Formatting logic rule to format worksheet data based on a cell value or formula
- Setting up a Conditional Formatting logic rule to place arrows, circles, bars... in cells
- How to edit and delete a Conditional Formatting rule

Chart Design, Curve Fitting, and Controlling Chart Views with Slicers

- Creating and professionally formatting engineering and science charts like XY Scatter, Column, Line, Pie...
- Combining two or more chart types into one chart (i.e., combo chart)
- Creating horizontal and vertical limit lines on your engineering and science charts
- Combining multiple worksheet tables into a single chart, great for trade studies, varying x-axis tables...
- Laying out multiple charts on the same worksheet to create chart reports
- How to curve fit your chart data
- Using Excel tables and Slicers to dynamically adjust and filter chart data

Creating and Using Key Worksheet Functions to Analyze Data

- How to create and use basic functions like SUM, COUNTA, AVERAGE, MAX, SUBTOTAL... in your formulas
- Using range references, names, and structured references as arguments to your functions
- How to nest worksheet functions in your formulas to perform powerful analysis tasks
- Using key statistical functions like STDEV.S, SKEW, FREQ, RANK.EQ... in your formulas
- Using key math and trig functions like ROUNDUP, ABS, TAN, RADIANS... in your formulas
- Using the TEXT, DAY, MONTH, YEAR, TODAY, DATE, TIME... functions to parse and create date time values
- How to use the NETWORKDAYS.INTL and WORKDAY.INTL functions to calculate the # of workdays between dates or from a date

Looking Up Data in Worksheet Tables

- How to use the VLOOKUP, HLOOKUP, and XLOOKUP functions to lookup data in a table
- Using XMATCH and MATCH to find item position (i.e., 1, 2, 3...) within a row or column
- How to use the INDEX function to perform advanced table lookups that return entire rows and columns

- Using the INDIRECT function, string concatenation, and names to dynamically toggle worksheet tables in formulas

Importing Text Files and Analyzing Worksheet Text Data with Functions

- Using Text to Columns to parse worksheet text and Text Wizard to import text files onto worksheets
- How to trim, substitute, and clean worksheet text using the text worksheet functions like SUBSTITUTE, TRIM, CLEAN...
- Parsing and cleaning worksheet text using functions like RIGHT, MID, LEFT, TEXT, SEARCH...
- How to combine worksheet text using string concatenation

Using Logic to Summarize, Count, and Analyze Worksheet Data

- The basics of building logic in formulas and determining logic triggers in your worksheet data
- Using functions like SUMIF, SUMIFS, MAXIFS, COUNTIF, COUNTIFS ... to sum, count, and calculate your data based on logic
- Using string concatenation to create dynamic logic for functions that adjust to changing inputs
- Building logic formulas using the IF, AND, OR, NOT, and IS logical functions
- Using IF to decide what formula to run or what value to output based on logic criteria
- Using logic to look for pieces of text (i.e., substrings) within text data

Using PivotTables to Analyze Engineering and Science Data

- Why use Excel tables to create the data that a PivotTable will use?
- Creating, formatting, and controlling PivotTables
- Calculating various statistics in a PivotTable
- Constructing a Pivot Chart from a PivotTable
- Using slicers and timelines to control your PivotTables and Pivot Charts

Using Array Formulas to Analyze Complex Engineering and Science Data Patterns

- Overview of how scientists and engineers can use array formulas to analyze complex worksheet data
- Creating Excel array formulas that process large complex data sets using the IF function
- How simple array formulas can be used to preprocess data before being used in functions like VLOOKUP, IF, MAX, MIN, AVERAGE...
- How engineers and scientists can create Excel array formulas that perform advanced lookups and table merging using functions like MATCH, VLOOKUP, HLOOKUP, INDEX, ROW, COLUMN...

Using Power Query to Access and Shape External Engineering and Science Data

- Using Power Query to automatically import data and shape it (i.e., filter, sort...)
- Using Power Query to link to internal and external data in workbooks, text files and databases
- Performing various key shaping tasks in Power Query like merging and filtering data, replacing characters, splitting dates, cleaning text...
- Refreshing, editing, and updating power query based tables and their sources

Linking Excel with Word and PowerPoint to Build Dynamic Reports

- Using Excel with Word or PowerPoint to make powerful reporting tools
- Linking cell values, ranges, and charts to Word documents
- Linking cell values, ranges, and charts to PowerPoint presentation