***Working Smarter with Microsoft Excel***

**Course modules:**

Module 1 – Entry level basics of MS Excel

Module 2 – Excel core features, functions & formulas, sorting, filtering, applying ranges and text & logical functions

Module 3 – Organize & visualize data, tables, charts, large workbooks, Excel pivot tables and Sparklines

Module 4 – Advanced tools: customizing formulas, proofing, interfacing, conditional formatting

Module 5 – Capstone case study

**Introduction to Microsoft Excel:**

MS Excel is a spreadsheet application

Spreadsheets are large flexible grids used typically to store, sort & work with numerical data

In Excel data is stored as worksheets, a digital form of spreadsheets

Excel worksheets are made of intersecting rows and columns

A column is a vertical series of cells from top to bottom

A row is a horizontal series of cells from left to right

An intersection of rows and columns is called a cell, which can contain many types of data

Typically Excel worksheets display columns with alphabetical headers and rows with numerical ones

Since there are only 26 letters to name columns, columns after 26th column are indexed as AA, AB, AC… etc. until the last column XFD (16,000 columns in total in a worksheet)

Rows are indexed from 1 through 1,048,576

Each cell is given an address in the column-row format

The top left cell is addressed A1: intersect of column A & row 1

An active cell is the cell that is currently selected

A cell range is defined a series of adjacent cells

A workbook is a collection of one/more worksheets

By default, a workbook only includes one worksheet. If the workbook happens to have more worksheets one can switch between them by clicking the tabs.

The active worksheet in the workbook will be in bold letters on a white background

**Excel user interface:**

Quick access toolbar – the topmost toolbar in the Excel UI that gives easy access to frequently used commands. This toolbar is completely customizable and can be positioned above/below the ribbon commands.

Tabs – groups of similar commands organized under tab names. E.g. File, Home, Insert, Page layout … etc.

Each tab has its own ribbon: a set of available commands

In the ribbon interface commands belonging to that tab are organized into groups

Commands that are usable only in certain situations may appear greyed out in other situations

The File tab opens a backstage view is also included in the tabs

The name of the active cell is shown in the name box

The formula bar allows one to enter data into cells: this data can be alphanumeric, pictures, symbols or formulae

When doing calculations results are shown in the worksheet (inside cells) but the calculation is visible in the formula bar

Status bar – the bottommost bar in Excel UI. It displays information about the Excel workbook

On right status bar also offers zoom and view functions.

**Getting to know MS Excel:**

Excel ribbon interface contains a huge amount of Excel’s features and functionality

Excel commands are found in the ribbon, categorized into groups

Each group is identified with a name and a boldface underlined name shows which tab is active

By default, there are eight tabs in MS Excel without the File tab

Excel also features contextual tabs that are not always present but appear when working with a specific object or group of information: e.g. for tables a special tab named Table design will appear in among the tabs

File tab returns a backstage view that has controls for the Excel application

New allows to create a new empty workbook or choose from available templates

Open allows to open workbooks from different sources like local disks or cloud storages

Info shows statistics about the current workbook: modify read/write permissions, check for compatibility issues with other programmes, manage versions of the workbook, choose what users see if the current workbook is viewed on web. Document properties are displayed on the far right

Save helps save the workbook

Save as helps save the workbook in an array of available formats

Share allows sending workbooks to others via email but requires the workbook be uploaded to OneDrive first

Export helps save the workbook as .PDF or .XPS files

Publish helps publish the workbook to Power BI, an online data analysis service

Close helps close the current workbook without closing the application

The back arrow at the top left allows to leave the backstage view for Excel workspace

Excel supports a variety of data types that can be entered into worksheets

These include labels which can be any alphanumeric text, values which are numbers on which functions and data analyses can be performed, dates and times which express the date/time/both.

Using the correct data types will facilitate downstream data analysis and make features specific to certain data types like pivot tables and what-if analysis easier to implement.

**Save and share a workbook:**

There will be two different save scenarios in MS Excel.

One is saving a new workbook for the first time and the other is saving changes to an existing workbook

When saving a new file save & save as functions will have identical effects and one can specify file name, file type and save location.

When saving an existing file any changes made will be saved to the existing file in its location.

When saving an existing file using save as, one gets the option to give the file a new name, file type and a new save location. Unless the changes are saved using save these new changes won’t be applied to the original file.

Workbooks prepared using older versions of MS Excel, particularly workbooks with .xls extensions will automatically open in compatibility mode. Such workbooks can easily be identified by compatibility mode text just next to the file name in the quick access toolbar.

For example, workbooks created using MS Excel 2003 open by default in compatibility mode in Excel 365. In the Info command in backstage view a convert option is given to convert workbooks made in older versions of MS Excel into Excel 365 format safely. This option will create a new workbook with Excel 365 file format and delete the old workbook from storage. This action is not reversible, and the deleted old workbook cannot be restored.

In the Info command under the File tab, a topic named Inspect Workbook helps check compatibility issues between the workbook and Excel 365. Upon clicking the Check for issues command a compatibility checker dialog box will appear and show all possible conflicts between Excel 365 and the version of Excel the current workbook was initially written in.

**Accessibility:**

This tool helps check possible accessibility issues that could affect users with disabilities. To use this tool File > Info > Inspect workbook > Check for issues > Check accessibility. This will display an accessibility task pane on the right-hand side of the screen. Contents of the accessibility task pane are divided into errors, warnings & tips. Errors section will list items in the workbook that people with disabilities will find difficult to access. E.g. objects with alternate texts, tables lacking headers. Warnings section will list hard to read color combinations, suboptimal table formatting, hyperlinks lacking screen tips. Tips section will give additional tips to improve the workbook in order to make it more accessible to differently abled users. Clicking on the issues listed in any of these sections will directly take you to the problematic part in the workbook and suggest fixes.

**Getting help in MS Excel:**

The search box in the title bar of the workbook can be used get help on functions or topics. These are rather generic topics. Advanced help options are available in the help tab. The ribbon of the Help tab is categorized into two groups: Help group & the Community group.

Clicking the Help command in the Help group launches a Help pane on the right of the screen. The search box in this pane can be used to search for items.

The Contact support command in the Help group will launch a help task pane that will help communicate with Office support team based on the software license.

Feedback command will launch a Feedback task pane that present options to submit to Microsoft.

Show training command will launch a task pane on the right of the screen that offers built-in MS Excel training sessions. (requires an internet connection)

What’s new command will launch the What’s new task pane with information on new features in Excel application.

Community command will launch the internet browser to a Microsoft Excel community help page that gives access to a wealth of information created by Excel user community.

Excel blog command will launch a browser window to a Microsoft Excel home page that has a wealth of Excel related user generated blog posts.

Suggest a feature command will launch a task pane where users can suggest/request a feature from Microsoft Excel developers in the upcoming versions.

**Working with data:**

Selecting cells – simply click on a cell

Selecting a contiguous series of cells – select a cell press and hold down the shift key and select the end cell of the desired series. This selection works both horizontally and vertically.

To select an entire row, click on the numeric header

To select an entire column, click on the alphabetic header

To select an entire worksheet, press the worksheet selector at the start of column headers or press ctrl + A

To click a range of cells, click on the cell and drag and cover the cells needed by mouse

To cut – ctrl + x

To paste – ctrl + v

There are an array of paste options in Excel;

Standard paste option is to paste all the contents in the clipboard with all the formatting.

Paste values option pastes just the values, excluding the formulae and formatting.

Paste special option can be used to further customize pasting options.

Paste transpose converts the rows into columns and vice versa.

Excel allows cells or cell ranges to be dragged and moved. To do so click on a cell/ select a range of cells and when the move cursor appears. Then click & drag the cell/cells to wherever you want.

Autofill in Excel will make entering data easier if it recognizes a pattern.

When just the value 2010 is entered in a cell and dragged downwards it just copies the value to the cells below. But when the values 2010, 2011 are entered in subsequent cells and dragged Excel recognizes a pattern and auto-fills the subsequent cells with 2012, 2013, 2014 ….. This happens when 2010, 2009 are entered is subsequent cells, selected and dragged down as well. Here the autofill recognizes decrementing pattern and fills the cells as 2008, 2007, 2006 …….

This autofill works row wise as well. And Excel is capable of recognizing a little more sophisticated patterns than just single digit increments or decrements.

Fill command in the Editing category under the Home tab offers more advanced autofill options.

Fill down, Fill up, Fill right & Fill left commands just copy and paste the selected values to populate the empty cells.

Flash fill is similar to autofill but Flashfill will automatically extract or combine data when it senses a pattern in adjacent cells. Flash fill can be invoked by Ctrl + E

Undo – reverse the last action Ctrl + z

Redo – repeat the last action Ctrl + z

**Working with rows and columns:**

Insert a new column – click on a cell of the column right to where you want the new column to be.

Insert a new row – click on a cell below the row where you want the new row to be

And click insert!

One can also insert individual cells, which will require cells on the right or cells below to be adjusted accordingly.

To resize columns or rows; Home > Cells > Cell size

Otherwise, one can double click on the column or row separator to autofit the column on the left or the row above.

Excel allow to hide rows or columns when necessary. This comes in handy when dealing with large worksheets. However, the hidden rows or columns won’t appear in print unless un-hidden before printing.

Home > Cells > Format > Hide/Unhide

To unhide a hidden column, select the two columns flanking the hidden column and then Home > Cells > Format > Hide/Unhide > Unhide columns

Excel allows to clear the contents of cells without having to delete the entire cells.

Clear contents – clears only the contents, leaving the comments and formats in place.

Clear comments and notes – clears only the comments & notes attached to the selected cells.

Clear hyperlink – clears only the hyperlinks attached to the selected cell/cells.

**Formatting text:**

e.g. formatted text

With the help of Format painter one can copy just the formatting from one cell and apply to others.

After application Format painter will automatically turn off.

To continue with more cells one can click the painter again.

Esc can be pressed to cancel the formatting when Format painter is activated.

To apply Format painter at more places by preventing it from turning off after the first application double click to start the Format painter. Once finished press Esc.

Many Excel formatting feature live-preview, which means when scrolling through those options one can see a preview of the options in the selected text or active cells.

When right clicking on a cell two toolbars pop up. One on the top is called the mini toolbar that offers commonly used formatting options related to the selected object type.

Hyperlinks – help embed texts and URLs in a cell. Select the cell, Insert > Link.

Ctrl + k helps invoke the Insert Hyperlink dialog box.

To remove Hyperlinks, use the Clear command on the Home tab.

**Formatting cells:**

Change the border styles, fill colors and the format of the data.