FIT1013 – Week 1: Calculating Data with Formulas and Functions

Learning Outcomes:

• Understand the principles of spreadsheets

• Utilise the basic Excel formulas to analyse data

• Understand Error values in Excel

• Perform what-if analysis to further analyse data

• Understand the differences between values and cell references

Tasks

- Introduction to unit – 30 minutes

- Weekly Objectives – 5 minutes

- The basic concepts of workbook, and principles of spreadsheets – 15 minutes

- Basic Excel formulas to analyse data – 15 minutes
  - Explore application help on Functions (i.e. F1, Help tab, Insert Function)
  - Working with DATE functions
  - Working with COUNT functions
  - Working with financial functions (e.g. PMT)

- Error values in Excel – 10 minutes

- What-if analysis – Goal Seek – 15 minutes

- Excel cell references – 15 minutes

- Post-class activities

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1. Introduction to unit

- Staff details
- Workshops
- Applied Sessions
- Consultations
- Resources
- Assessments

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FIT1013: why is it useful?

- Excel knowledge assumed in many BIS core and elective units.
- Expertise in spreadsheet modelling and programming is prescribed by IBL sponsors as essential knowledge for students on placement
- Spreadsheet modelling is the most widely used tool for Business modelling

Excel & Access:

Useful business tools for

- Storing and manipulation of data
- Data analysis and visualization
- Decision Support
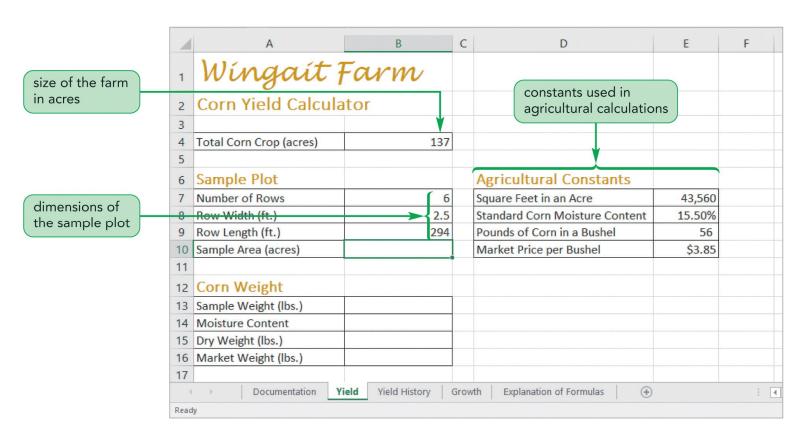- Problem solving
- Presentation/reporting

Excel 2019 and Access 2019

- Excel – the most widely used DSS software.
- Access/Excel + VBA enables
  - Database
    - from an Excel tables and list/s
    - or from an Access database
    - (other databases….)
  - Data Analysis
    - using pre existing analysis tools – e.g. Scenario Manager, Charts, data tables, pivot tables, Excel functions, Goal seek, Solver
    - Using user defined functions
    - Using VBA
  - Interface and automation
    - built using VBA

3. The basic concepts of workbook, and principles of spreadsheets

Activity

What are the benefits of documenting contents of a workbook?

True/False:

- Every workbook should be accessible to its intended users.
- You should never use jargon or unusual terms in a workbook

4. Basic Excel formulas to analyse data

- Quick way to calculate summary data

- Every function follows a set of rules (syntax) that specifies how the function should be written

- General syntax of all Excel functions:
    - *FUNCTION(argument 1, argument2, …)*

- Square brackets indicate optional arguments:
    - *FUNCTION(argument1, [argument2=value2, …])*

- An argument can be any type of value including text, numbers, cell references, or even other formulas or functions

- Functions can be placed inside another function, or **nested**; nested functions must include all parentheses

Some Excel Functions

Function	Description
AVERAGE(*number1*[,*number2*,...])	Calculates the average of a collection of numbers, where *number1*, *number2*, and so forth are numbers or cell references
COUNT(*value1*[,*value2*,...])	Counts how many cells in a range contain numbers, where *value1*, *value2*, and so forth are either numbers or cell references
COUNTA(*value1*[,*value2*,...])	Counts how many cells are not empty in ranges *value1*, *value2*, and so forth including both numbers and text entries
INT(*number*)	Displays the integer portion of *number*
MAX(*number1*[,*number2*,...])	Calculates the maximum value of a collection of numbers, where *number1*, *number2*, and so forth are either numbers or cell references
MEDIAN(*number1*[,*number2*,...])	Calculates the median, or middle, value of a collection of numbers, where *number1*, *number2*, and so forth are either numbers or cell references
MIN(*number1*[,*number2*,...])	Calculates the minimum value of a collection of numbers, where *number1*, *number2*, and so forth are either numbers or cell references
RAND()	Returns a random number between 0 and 1
ROUND(*number*,*num_digits*)	Rounds *number* to the number of digits specified by *num_digits*
SUM(*number1*[,*number2*,...])	Adds a collection of numbers, where *number1*, *number2*, and so forth are either numbers or cell references

Activities

- Explore application help on Functions (i.e. F1, Help tab, Insert Function)

- Working with DATE functions

- Working with COUNT functions
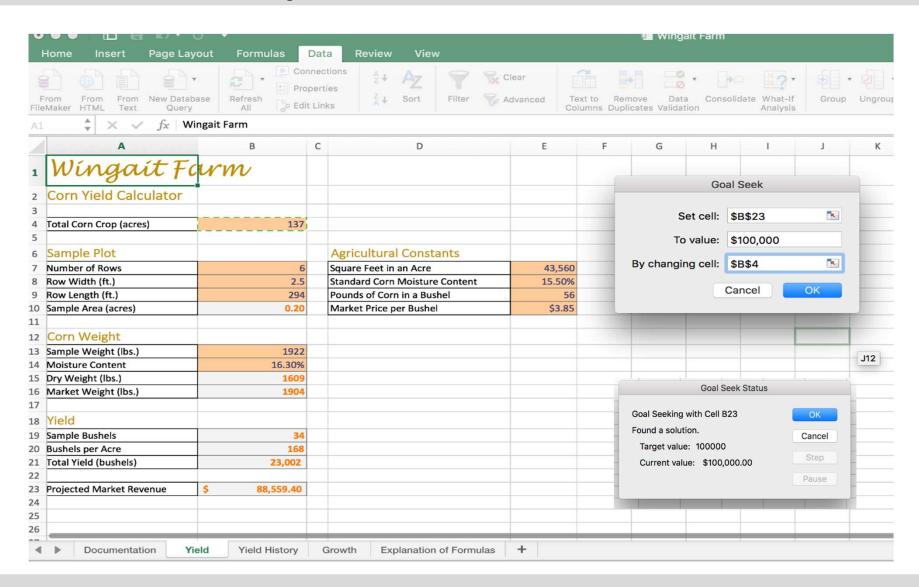
- Working with financial functions (i.e. PMT)

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5. Error values in Excel

Error Value	Description
#DIV/0!	The formula or function contains a number divided by 0.
#NAME?	Excel doesn't recognize text in the formula or function, such as when the function name is misspelled.
#N/A	A value is not available to a function or formula, which can occur when a workbook is initially set up prior to entering actual data values.
#NULL!	A formula or function requires two cell ranges to intersect, but they don't.
#NUM!	Invalid numbers are used in a formula or function, such as text entered in a function that requires a number.
#REF!	A cell reference used in a formula or function is no longer valid, which can occur when the cell used by the function was deleted from the worksheet.
#VALUE!	The wrong type of argument is used in a function or formula. This can occur when you reference a text value for an argument that should be strictly numeric.

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Activities

- Explore different types of error values in Excel.

- How to resolve them?

6. What-if analysis – Goal Seek

Activities

- How many acres of corn crops needed if your projected market revenue is $100,000?

7. Excel cell references

- Workbooks can include data entered in cells that are then referenced in formulas to perform calculations on that data.

- Types of cell references
  - Relative References
    - When a formula includes a cell reference, Excel interprets it as being located relative to the position of the current cell.
  - Absolute
    - A fixed reference – one that always references the same cell no matter where it is moved – is called an absolute reference.
  - Mixed
    - A mixed reference contains both relative and absolute references

Activities

- Explore each of type of references.

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8. Post-class Activities

- Try these functions:
  - Min(), max(), average(), sum(),…..etc

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Reference

- Carey, P. (2019). New Perspectives Microsoft Office 365 and Excel 2019 Comprehensive. Cengage.