

FIT1013 Digital futures: IT for Business

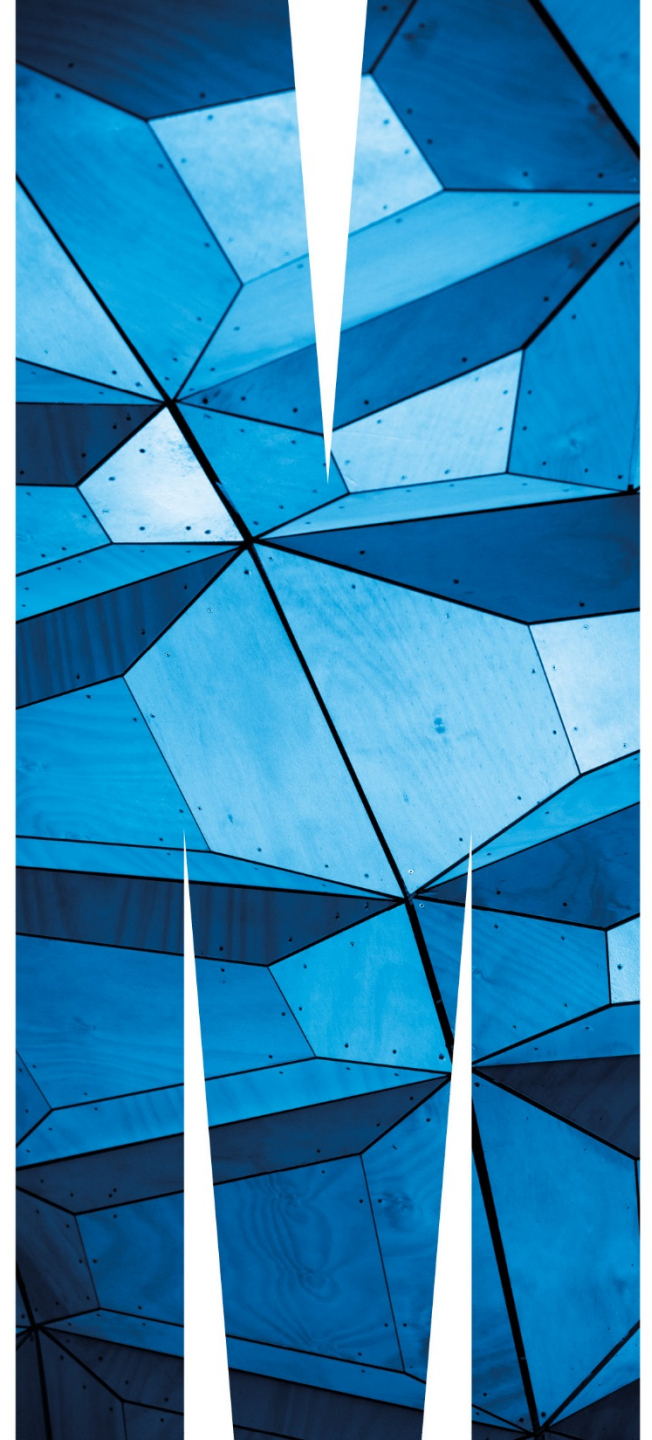
Week 1: Calculating Data with Formulas and Functions

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On completion of your study this week, you should aim to:

- Make workbooks user friendly
- Use/Write Excel functions
- Perform what-if analysis
- Interpret Error Values
- Understand Excel cell references

Reference: Microsoft Excel 2016, New Perspectives Series, Parsons, Oja, Carey, Desjardins
Comprehensive Edn., Cengage Learning, Module 3



FIT1013 Team

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Consultation times will be published on Moodle.

Unit Learning Objectives

At the completion of this unit students should:

- Be proficient in use of standard spreadsheet and database software for business applications
- Have a sound basic knowledge of Excel 2016 VBA
- Have an understanding of the relational database model with reference to Access 2016
- Be aware of emerging trends in data analytic platforms

Note:

Also, targets and prepares FIT's undergraduate for IBL placements during their degree

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

Organisation of Unit

Each week:

- Lecture (1 hour)
 - Present weekly objectives, topics, overview and sources of information
- Tutorial (2 hours)
 - Investigate, explore and understand weekly objectives
 - Class activities based on weekly topics
 - Practise and learn weekly topics
- Lab (1 hour)
 - Assess understanding of weekly objectives
 - Class test and quiz

Note: Students should engaged in this unit in the order above. After each tutorial, extra private study is recommended to consolidate knowledge and understanding in preparation of the Lab where students' knowledge and understanding will be assessed.

Unit Assessment

ASSESSMENT	% OF FINAL MARK	COMMENT
Examination	50%	Closed book (2 hours)
Non-Exam		
Tutorial Attendance & Participation	Hurdle	This is a hurdle to your Lab Quiz and Test for the week
Lab Quiz and Test (Weekly)	20%	Based on weekly topics
Assignment 1	10%	Individual assignment
Assignment 2	20%	Group Assignment, marks allocated for work in progress and assessed during tutorials/labs

What YOU NEED TO KNOW

- Coding and Plagiarism
 - Read the Policies!
- You **can** discuss ideas with any member of the FIT1013 staff or any other student
- You **can** search the **Web** high and low to get **ideas**
- You **CANNOT** cut and paste or manually copy without attribution
 - without attribution = **PLAGIARISM** = **DISCIPLINARY OFFENSE**
- If you reuse code and **carefully acknowledge/attribute the source** (e.g. your study group's name, open source coding tutorials etc.) – you must expect a minimal mark for such code.
 - After all you didn't write it
- You **must** be able to explain confidently any code you present – else you cannot get marks for it.

What you can do if you're absent with a valid reason

- Special consideration – **FORMAL PROCEDURE.**
 - for late hand-ins of lab work etc. with valid reason
- Normally we require medical cert/statutory declaration etc. and signed formal special consideration form – **submitted to staff officially on HARDCOPY.**
 - Any queries after formal application – please email both Yen and Peter.
 - **Approval is NOT AUTOMATIC!**
- Please read the policy website for complete details!

Attendance at tutorials

- You are expected to attend ALL tutorials and labs...
- The roll will be taken...
- Your tutorial participation, lab test and online quizzes will be assessed....
 - You will be given a mark for your work at each tutorial

How can I find my tutor outside tutorial times?

- Tutors will be available for consultation. Details of when the tutors are available for each subject can be found on the FIT1013 Moodle site.

Unit Schedule – subject to changes

Week	Topic/Objectives	Prescribed Textbook Reference	Tutorial	Lab
1	Calculating Data with Formulas and Functions	Excel 2016 Module 3 (Check Modules 1 and 2 by yourself)	Tutorials commence in Week 1	
2	Excel Tables, PivotTables, PivotCharts, Introduction to Tableau	Excel 2016 Module 5		
3	Advanced Functions	Excel 2016 Module 8		
4	Developing an Excel Application	Excel 2016 Module 7	Assignment 1 due 17 August	
5	Fundamentals of Programming	Excel VBA		
6	Numeric Variables and Selection Structures	Excel VBA		

Unit Schedule – subject to changes

Week	Topic/Objectives	Prescribed Textbook Reference	Tutorial	Lab
7	Date Variables and Repetition Structures	Excel VBA		
8	User Forms	Excel VBA		
9	Modularisation, Structure Charts and Connecting to External Data	Excel 2016 Modules 10,11,12		
10	Creating a Database and Defining Table Relationships	Access 2016 Modules 1, 2		
11	Querying a Database and Creating Advanced Queries	Access 2016 Modules 3, 5	Assignment 2 due 12 October	
12	Creating Advanced Table Relationships, Summary and Review	Access 2016 Module 9		

Assessment

IMPORTANT NOTE:

- To pass a unit which includes an examination as part of the assessment, a student must obtain, unless otherwise approved and published:
 - 40% or more in the unit's examination, and
 - 40% or more in the unit's total non-examination assessment, and
 - an overall unit mark of 50% or more.
- If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is:
 - equal to or greater than 50%, then a mark of 49-N will be recorded for the unit.
 - less than 50% then the actual mark for the unit will be recorded.

Prescribed Textbooks

Everyone should have their **own copy** of these texts for the semester. There are also copies of these books in the library.

- Microsoft Excel 2016, New Perspectives Series, Parsons, Oja, Carey, Desjardins, Comprehensive Edn., Cengage Learning.
- Microsoft Access 2016, New Perspectives Series, Shellman and Vidnik, Comprehensive Edn., Cengage Learning.

Useful References for VBA

You do not have to buy all of them...

Basic texts:

- Excel VBA for Business, Steven Chapra and Paul Blayney, Prentice Hall
- Excel 2002 VBA Programming, Thompson Learning
- Introduction to Excel VBA Programming with applications in Finance and insurance, Gou Jun Gan, CRC Press, 2017.

Moderate level texts:

- Visual Basic for Applications, Diane Zak, Course Technology, 2001 (previous text, no longer available to purchase, available in Hargrave-Andrews library)
- Advanced Applications using Microsoft Excel 2003, Prentice Hall
- Excel 2003 VBA Programming with XML and ASP, Julitta Korol (earlier version also)
- VBA and Macros for Microsoft Excel, Bill Jelen and Tracy Syrstad, QUE

FIT1013 Moodle Site

- The first point for you to contact...
- All the necessary information...lectures, tutes etc.
- Address: <http://moodle.vle.monash.edu/>

Or just go to your **my.monash portal** and follow the links

- Contents are organised in a weekly manner with pre-class activities (if any) that you are expected to attempt before the lectures.
- After each lecture, you are also expected to attempt the quiz (based on the week's contents) before the next lecture.

Your PC at home...

- Is OK, provided it can run Office 2016
- There are subtle differences in the interface between Macs and PCs
- Assignments should be completed using Office 2016 – this is available in all FIT labs.
- This is a MoVE unit – see Moodle for details about laptop loans
- See also in Moodle about installation of Tableau software for next week's study



Words of Advice...

- Workload
- Pace
- Lectures, Tutorials, Labs, expectations, etc...
- Getting Information you may require...
- Getting Help...Tutors, Lecturer
- If you are ill and cannot attend, please email your tutor in the first instance.

- **VZ4I0C**

DSS: What is a Decision Support System?

- “An information system that allows a user to explore the impact of available options or decisions” (Computing for Business Success, Richardson, Beiers, Bruno, Deng and Henschke)
- Uses data in spreadsheet or database (e.g. Access) and uses some kind of analytical technique to analyse the data and present with the use of a gui to the user.

Who uses a DSS?

Managers/ decision makers – at all levels in an organisation. E.g.

- Project managers
- Business analysts
- Consultants
- CEO' s
- Etc...

Excel 2016 and Access 2016

- 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

Making Workbooks User-Friendly

On completion of your study this week, you should aim to:

- **Make workbooks user friendly**
- Use/Write Excel functions
- Perform what-if analysis
- Interpret Error Values
- Understand Excel cell references



Making Workbooks User-Friendly

- Many users may use the workbook so it is important they understand the contents
- An explanatory worksheet can be added explaining concepts including:
 - Industry jargon (industry-specific terms, or technical terms) or unusual terms
 - What is being calculated and why
 - How the equations make those calculations

Making Workbooks User-Friendly

The screenshot shows an Excel spreadsheet with the following structure and annotations:

- Row 1:** Title "Wingait Farm" (Annotation: "size of the farm in acres" points to this row).
- Row 2:** Title "Corn Yield Calculator".
- Row 3:** Blank row.
- Row 4:** "Total Corn Crop (acres)" with value "137".
- Row 5:** Blank row.
- Row 6:** Title "Sample Plot".
- Row 7:** "Number of Rows" with value "6".
- Row 8:** "Row Width (ft.)" with value "2.5". (Annotation: "dimensions of the sample plot" points to this row).
- Row 9:** "Row Length (ft.)" with value "294".
- Row 10:** "Sample Area (acres)".
- Row 11:** Blank row.
- Row 12:** Title "Corn Weight".
- Row 13:** "Sample Weight (lbs.)".
- Row 14:** "Moisture Content".
- Row 15:** "Dry Weight (lbs.)".
- Row 16:** "Market Weight (lbs.)".
- Row 17:** Blank row.
- Columns D-F:** "Agricultural Constants" section.

Agricultural Constants		
Square Feet in an Acre		43,560
Standard Corn Moisture Content		15.50%
Pounds of Corn in a Bushel		56
Market Price per Bushel		\$3.85

 (Annotation: "constants used in agricultural calculations" points to this section).

The spreadsheet includes a status bar at the bottom with tabs: Documentation, Yield (active), Yield History, Growth, and Explanation of Formulas. The status bar also shows "Ready".

Ex 134

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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

Using Excel Functions

On completion of your study this week, you should aim to:

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

<https://support.office.com/en-us/article/Excel-functions-by-category-5f91f4e9-7b42-46d2-9bd1-63f26a86c0eb>

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Excel Functions

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Activities:

- Explore application help on Functions (i.e. F1, Help tab, Insert Function)
- Working with DATE functions
- Working with COUNT functions (i.e. COUNTIF vs SUMIF)
- Working with logical functions (i.e. IF)
- Working with lookup functions (i.e. VLOOKUP)
- Working with financial functions (i.e. PMT)
- Refer to Week 1 Resources for details

Week 1 Resources

On completion of your study this week, you should aim to:

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Additional Topics

- Performing What-If Analysis
- Interpreting Error Values
- Understand Excel Cell References

- See Week 1 Resource for details

Tutorial and Lab Preparation

- Work through Excel Module 3 of textbook.
- Make sure you understand all functions:
 - PMT() function
 - IF() function
 - Min(), max(), average(), sum(),.....etc
 - Date functions: NOW(), TODAY(),etc
- Work through Excel Modules 1 and 2 – introduction to Excel – if you haven't done this already